AVIATION WEEK
A McGRAW-HILL PUBLICATION
DECEMBER 27, 1948

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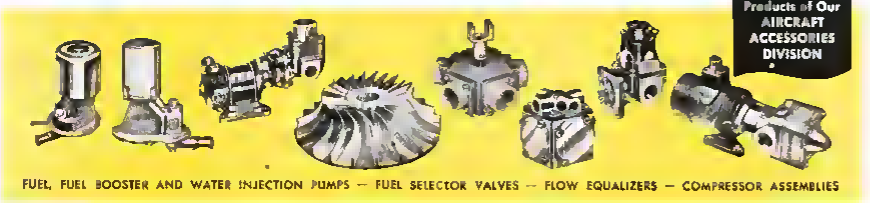

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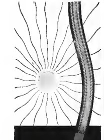

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Vol 49, No. 26 **AVIATION WEEK** December 27, 1948

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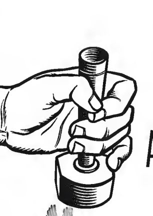

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NEWS SIDELIGHTS

New Job for Alison

Johnny Alison will leave his job as Assistant Secretary of Commerce for Air in February to take a job with private industry. His new job will not be in aviation. There is some discussion in top government circles as to whether the job of assistant secretary should be abolished, leaving the job of CAA administrator as the top civilian aviation job. There is also a movement afoot to promote Dr. Dean Brimhall now assistant to CAA Administrator Rentzel for the post soon to be vacated by Alison.

Safety Record

The best overall safety record in the history of American air transportation—and a million dollars worth of attendant favorable publicity—were in the making as U. S. certificated carriers neared the end of 1948. Barring fatal accidents during the last 10 days of December, scheduled domestic carriers will have only 1.4 passenger fatalities per 100 million passenger miles flown, and international operators will have a fatality rate of 1.0. Domestic lines bettered their prospective 1948 record in 1939, 1943 and 1946, and the international carriers in 1940 and 1942. But the overall domestic and international safety mark this year could be tops.

PCA-Convair Deal

Capital Airlines (PCA) is standing first in line to lease planes from the proposed Convair Equipment Corp.

The carrier wants ten Conair-Liners and already has worked out tentative agreements with Consolidated Vultee officials. Capital has long felt the need for new twin-engine aircraft but financial difficulties forced it to cancel an order for 35 Martin 2-0-2s last year. Expected mail pay increases would help Capital swing the leasing deal with Convair.

Acting Manager Webb

When Capt. Leland D. Webb comes to Washington Feb. 1 to serve as acting general manager of Aircraft Industries Assn., it is officially at least, a temporary arrangement.

Maj. Gen. Oliver P. Echols, who is retiring from the AIA presidency to become chairman of the board of Northrop, continues to hold the presidency until his successor is named. But there is some speculation in industry that Webb might stay on in Washington and eventually be named Echols' successor.

The retired Navy captain, who has piloted both airplanes and submarines and who once served as BuAir representative at the Douglas plant, has been vice president of AIA in charge of the western office for two years. In his favor are his record in the Navy and in the west coast AIA job, plus the strength of the powerful west coast manufacturers in the overall AIA setup. If his temporary AIA administration is good enough, it might swing the balance in his favor.

Slope Line Specs

Civil Aeronautics Administration has drawn up functional specifications for manufacture of the slope line approach light system recently approved as a joint military-civil standard for high intensity approach lights.

CAA specification No. 936 will be available next week. Indications are that it will allow individual manufacturers considerable latitude in designing their own applications of the slope line principle. First installation of the slope line system is scheduled for Idlewild International Airport in New York, where they will be used in addition to the Westinghouse system now in operation. Washington National Airport will get the second slope line system.

CAA plans to ask for bids on up to 10 systems for its budget allocation now available for high intensity lighting. Additional funds for approach lights have been requested in the fiscal 1950 budget now being prepared for presentation to Congress.

CAA Pilot Plan

Civil Aeronautics Administration's study of a proposed central pilot training school to train all U. S. transport pilots (AVIATION WEEK, Dec. 13) was presented to CAA Administrator Delos W. Rentzel before he left for Europe. Indications are that he will continue to push the proposal.

Additional support for the central training school is likely to come from the Civil Aeronautics Board, the Prototype Development Committee headed by Grant Mason and the smaller airlines. Opposition is expected from the Air Line Pilots Assn., which has already taken an official stand against the project and the large airlines that have substantial investments in their own training schools.

If CAA does take over Northeast Airlines Ardmore (Okla.) training base for the new school, the present CAA standardization center at Oklahoma City, only 90 miles away, will be absorbed by the Ardmore project.

Supersonic Stall

People who are familiar with the Bell Aircraft NACA-USAF X-1 supersonic research project feel that the official line that piloted supersonic flight went smooth according to plan is giving the American public, who foots the research bill, an erroneous impression on the problems remaining to be solved. It is also detracting considerably from the credit due Capt. Charles E. Yeager, pioneer supersonic pilot of the pressure-sealed X-1 and on whose shoulders the major responsibilities of the supersonic flight research have fallen.

Yeager has surmounted some hair-raising obstacles in his work, and it has been far from the "cinch" implied in his own comments on the subject. Among the experiences which Yeager has survived is a stall at 63,000 ft. from which the airplane pitched over into a dive that went well past the vertical. In his recovery the X-1 did a high speed stall that whipped it back past the vertical. Yeager fought the plane through several series of this maneuver before managing final recovery. Close friends of the modest Air Force captain doubt if he would ever tell this story on himself even if security restrictions permitted.

Nobody Fired?

After calling together CAA personnel to reassure them about the effect of the long-pending reorganization of the agency, CAA Administrator Del Rentzel took a quick airline trip last week to London. Purpose of his visit was to negotiate with British on international standardization of approach and landing systems.

Before going, Rentzel told employes he was dissatisfied with the proposed reorganization of the Office of Aviation Safety, pointed out that he had frozen CAA vacancies since last September as a means of cutting total personnel without firing. The reorganization will be a series of adjustments and shifting functions rather than dismissals, Rentzel told them.

He considers civil aviation business "in a bad way" and the only agency that can do anything about it is CAA, he told the workers.

AVIATION CALENDAR

Jan. 5 1949—Florida Flying Alligators Club 14th annual reunion Melbourne, Fla.

Jan. 7-9—Miami All American Air Maneuvers Miami, Fla.

Jan. 10-11—National Aircraft Standards Council steering committee meeting AIA offices Hollywood, Calif.

Jan. 10-14—Materials Handling Show sponsored by the American Society of Mechanical Engineers Convention Hall, Phila.

Jan. 10-14—Society of Automotive Engineers Annual Meeting and Engineering Display, Hotel Book-Cadillac, Detroit, Mich.

Jan. 11—ICAO Communications division, Montreal

Jan. 12—SAE annual meeting dinner Detroit Masonic Temple

Jan. 12-14—Commercial Spray Operators conference University of Illinois Urbana, Ill.

Jan. 13-14—Fourth NAS Council meeting, AIA offices Hollywood, Calif.

Jan. 13-14—National Aircraft Standards Council meeting, Los Angeles

Jan. 18-Feb. 11—Third Air Transportation Institute American University, Washington, D. C.

Jan. 20-22— Minute Plant conference Society for Advancement of Management (panel discussions on procurement program and industrial preparedness), Chicago

Jan. 24—Honors Night dinner Institute of the Aeronautical Sciences Hotel Astor, New York City

Jan. 24-27—IAS seventeenth annual meeting Hotel Astor New York City

Jan. 27—Society of Automotive Engineers metropolitan section finals and lubricants meeting Engineering Societies Bldg. New York City

Feb. 8—ICAO Operations division, Montreal

Feb. 22—ICAO Airworthiness division Montreal

Mar. 8—Society of Automotive Engineers metropolitan section, air transport meeting Engineering Societies Bldg. New York City

Mar. 10-12—Annual meeting of American Society of Tool Engineers, Hotel William Penn Pittsburgh

Apr. 3-6—American Association of Airport Executives Oklahoma City

Apr. 11-13—Society of Automotive Engineers national aeronautic and air transport meeting Hotel New Yorker, New York.

Apr. 11-15—Western Metal Congress and Exposition sponsored by American Society for Metals Shrine Civic Auditorium, Los Angeles Calif.

May 23-24—Annual meeting of The Magnesium Assn. Edgewater Beach Hotel Chicago.

July 3-4—Final Annual Southern California International Air Race Long Beach.

July 13—ICAO North Pacific regional air navigation meeting Seattle.

PICTURE CREDITS

13—USAF 14—USMC 21—North American 22—Curtiss-Wright 25—Consolidated Vultee 27—USN 32—Slick 33—ALFA 38—Northwest.

NEWS DIGEST

DOMESTIC

Wind tunnel developed by the Wright Brothers in which they tested many of their theories, has been bought from the Wright estate by a group of heirs and donated to Miami (Ohio) University for use by the school of aeronautics Probate of the will of the late Orville Wright disclosed an estate of $1,023,903, of which $309,703, largest single bequest, was to Oberlin College

Rocket and jet propulsion study and research centers will be established at Princeton University and California Institute of Technology by Daniel and Florence Guggenheim Foundation The foundation has set aside $500,000 to underwrite the centers for seven years Principal post at each school will be a Robert H Goddard professorship

Altitude record for two-place gliders set Sept 10 by William G Bricgleb and Dr Thayer Smith at Mojave Desert, Calif, was recognized by National Aeronautic Assn as new national record Altitude was 14,800 ft above low point or 18,010 ft above sea level

Airlines War Training Institute, war time organization that directed indoctrination of airline pilots assigned to military work, has donated $6000 to the Air Force Aid Society This is the balance in AWTI's treasury except for tax reserve and reserve to cover storage of records

FINANCIAL

Fairchild Engine & Airplane Corp expects a 1948 net profit of an undetermined amount, Chairman J Carlton Ward, Jr reported to stockholders Final results will depend upon year-end audit, but should be close to 1947's $1,642,411 profit Ward says sales will be less than last year's $38,123,867 Backlog is $80 million

FOREIGN

Colombian crash of Lansa Airlines DC-3 into mountain near Bogota killed 30 persons It was the country's second worst air disaster, exceeded only by accident which took 52 lives in January 1947

De Havilland Engine Co., Ltd., appointed A F Burke managing director He has been general manager

International air traffic transactions through IATA clearing house in London during October totaled $13,674,000, off $1,487,000 from the September peak Total for the year, however, remains well above that for 1947 From January to October, 1948 clearing house transactions amounted to about $97 million, against approximately $40 million in the same period of 1947

INDUSTRY OBSERVER

► Piasecki's XJPH-1 performed the first known helicopter loop during flight tests recently at the company's Morton, Pa., plant. The feat was accomplished during dive pull-out tests aimed at withstanding 2.75 G After two runs at slightly over 2G the pilot applied full aft cyclic stick and full up collective pitch at the same time Resulting pullout put the XJPH-1 in a vertical position from which the pilot decided to recover by continuing on through a loop Acceleration of 4.16G was shown on the VG recorder and no structural failure occurred. XJPH-1 has been clocked top speed of 130 mph ; a 1500 ft per minute vertical rate of climb and forward climb of 1700 ft per minute

► Bendix Radio at Baltimore is developing a commercial version of its military omni-range VHF navigation receiver Bendix will aim at the commercial airline market with the new model, designated NA-3, and expects to be in production by next summer Bendix is also working on a new Civil Aeronautics Administration contract for 225 goniometers, the heart of the omni range ground station equipment Bendix is the sole manufacturer of this equipment and has previously built 900 goniometers for CAA omni-range stations

► Development difficulties have delayed the Allison XT-40 turboprop engine for several months and initial takeoff flight of the Convair XP5Y-1 may be delayed until May from its originally scheduled January date. Meanwhile the 5000 hp. engine will be tested in the nose of a specially strengthened Boeing B-17 bomber, similar to the Wright XT-35 flight test arrangement

► Air Force expects the inversely tapered swept wing of the Republic XP-91 to solve the problem of controlling swept wing fighters at low speeds required for such as takeoff and landing The XP-91 wing has a narrow chord at the root and a wide chord at the tip, which prevents spanwise flow of the boundary layer and preserves aileron control at near stalling speed The combination jet and rocket speedster is scheduled to fly in February at Muroc Design top speed is supersonic

► British Air Ministry has delivered three de Havilland Vampire Mark IIIs to the French air force for service trials Further deliveries of earlier Vampire models are expected to the French who will use them for jet fighter training. Also expected soon is announcement of a license agreement under which Vampires will be built in France

► Curtiss-Wright has offered a turboprop version of its XF-87 to the Navy as a long range all weather fighter and search plane The new design features a single Wright XT-35 turboprop unit in each wing driving single, four-blade propellers plus jet thrust from the rear of the nacelle Air Force is also examining the possibilities of this installation in an attempt to increase the range of the type Propeller installation also improves the poor stalling characteristics which "washed out" the turbojet-powered version

► Air Force will take delivery of the last Navy Piasecki HRP-1 rescuer for extensive tests and evaluation at Wright Field Craft will be subjected to aircraft tow tests and various handling characteristic studies as a prelude to delivery of the larger Piasecki XH-16 transport helicopter.

► Aviation Maintenance Corp.'s plans to manufacture the Allison 65 lb radar, once envisioned as a safety item for airliners, have been abandoned Prospective radar users now are thinking in terms of a gyro stabilized unit, with the search beam retaining a constant relation to the horizon regardless of aircraft attitudes. To modify the Allison unit to this specification might have required an investment of close to $100,000 Aviation Maintenance Corp. has returned the radar project to inventor Don Allison for his development or disposal to another manufacturer

► British Overseas Airways Corp. will order 25 Bristol type 175 turboprop airliners from the British Ministry of Supply This airliner is intended as a Constellation replacement about 1953 Three versions of the transport are being built a sleeper with 38 berths, a 60-passenger model, and a 70-passenger version for operation at bargain rate fares Bristol 175 is scheduled to be powered with Bristol Proteus turboprops but if this engine is not available when the airframes are ready Bristol Centaurus piston engines will be used temporarily Transport is supposed to cruise at 325 mph. at 20,000 ft, and have a still-air range of 2500 miles.

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AVIATION WEEK

Dec. 27, 1948

Profits Seen From Peak Peacetime Sales

Year-end report of AIA president cites 27 percent gain over 1947 for 15 firms.

By Alexander McSurely

Aircraft sales for 1948 will top the billion dollar mark for the first time since World War II making this a profit year for most major airframe manufacturers.

A year-end statement issued by Maj. Gen. Oliver P. Echols, president of Aircraft Industries Assn., authoritatively predicts:

- Most major companies will report "at least modest profits for 1948."
- Total 1948 sales of the 15 major firms are expected to reach a new postwar high of $1,110,000,000. This is a gain of nearly 25 percent over 1947 sales of $848,000,000 by the same companies.

▶**Encouraging Outlook**—The AIA president sees an "encouraging" outlook for the industry continuing into 1949, despite recent official warnings of possible adjustments in the 70 Group Air Force program and the 14,500 plane Naval Aviation program which may be forthcoming.

If the five year program prescribed by the President's Air Policy Commission and the Congressional Air Policy Board is followed, he foresees relatively steady volume of military aircraft production.

▶**Help Taxpayer**—Stability of operations by major aircraft manufacturers with resultant substantial economies for the taxpayer in airframe pounds per tax dollar would be a natural consequence of such steady volume, Echols points out.

Production of military aircraft in 1949 according to present plans will exceed 3000 units as compared to estimated production of 2200 to 2400 units in 1948. Total airframe weight will increase proportionately.

▶**Budget Is Key**—Publication of the President's budget early in January is expected to provide the first reliable indication of the probable amount of aircraft procurement contracts that will be let in the 1950 fiscal year.

Transport aircraft production in 1949 will be approximately the same as in 1948—around 170 units. Approximately 135 transports are on order for delivery in 1949, and contingent production of between 40 and 100 additional transports is expected. Sharp drop in transport production will come in late 1949 when current order deliveries are completed.

▶**Executive Aircraft**—Approximately 70 smaller twin engine executive type transports have been produced in 1948, it is estimated and 1949 production in this field is expected to be a "sizable quantity" without specific numerical prediction.

▶**Personal Planes**—Sharp drop in the unit production of personal aircraft was noted in 1948 to a total estimated at 7200 to 7400 as compared with 15,515 units in 1947. A large proportion of the 1948 production was in four place types used in agriculture and business, with highest cost per unit, so that dollar volume of the major personal plane makers did not suffer so severely as the unit decline might indicate. The 1947 production was more largely confined to two place types used mainly for training.

Prediction for 1949 is for deliveries in this field to exceed the 1948 volume assuming business conditions remain approximately the same and with the continuing growth of business and agricultural uses of the four-place aircraft.

▶**Helicopter Estimate**—The Echols year-end summary estimates that some 200 helicopters were produced in 1948 for military and commercial purposes combined and does not forecast production in this type aircraft for 1949.

The forecast for a combined profit in 1949 was based on reports from the major aircraft companies. These indicated however, that at least three of the principal companies would probably still report a loss for 1948. Total net profits will be modest and will by no means offset the heavy losses incurred in 1946 and 1947, the report states.

▶**Military Orders**—Analyzing production orders from the 70 group program the AIA report shows that military plane deliveries in 1948 represented almost entirely orders from previous appropriations. Results of the new program will not be seen in schedules until 1949. Full effect is not anticipated until 1950 when the delivery rate will be approximately twice that in 1948.

Development of radical new experimental jet fighters and bombers and planning for their production has given the industry new problems. Difficulty is reported in recruiting trained engineering personnel, and skilled labor, with training and retraining programs necessary. Closed or partially closed plants have been reopened and retooled to meet need for additional production space.

▶**Production Flow**—Difficulties in obtaining early production flow are further complicated by the fact that many of the planes are being developed and engineered for production simultaneously, to telescope the time lag before planes are in operational service.

The AIA president refers to the year now closing as outstanding in aviation history because of the blueprint for aviation progress drawn by the President's and Congress's aviation policy organizations. This if fully implemented, would assure restoration of U. S. air power to world leadership, maintenance of a sound and progressive industry essential to national security, and continuance of a healthy commercial aviation.

MATS Sees Need Of 300 New Planes

Military Air Transport Service will require more than 300 new transports from the aircraft industry during the next five years.

Replacement requirements for MATS, as detailed in its first quarterly operations report, will be 200 long range strategic transports, 100 twin engine transports and less than 100 utility type transports. MATS estimates that by July 1952 all of its currently assigned C-54s will have reached obsolescence and will be strictly second line aircraft.

▶**Aircraft Fleet**—At the end of September MATS had 834 aircraft assigned including 283 C-54, 249 C-47; nine C-74, three C-97, seven C-46, 60 B-29 and 51 B-17. Replacements during the next two fiscal years will all be in the long range strategic type. Lockheed C-121 (Constellation); Boeing C-97 (Stratofreighter) and Douglas C-124.

The MATS report which covers operations from last July 1 to Sept. 30, was submitted to Secretary of Defense James V. Forrestal and the Inter-service Military Air Transport Board, which is charged with review of MATS activity and policy.

▶**Mobilize Airlines**—Significant to civil airlines was the section of the report dealing with wartime mobilization. MATS stated flatly that the contract carrier type of operations used in World War II would be less satisfactory than MATS taking over civil airlines including their equipment, flight crews and maintenance facilities.

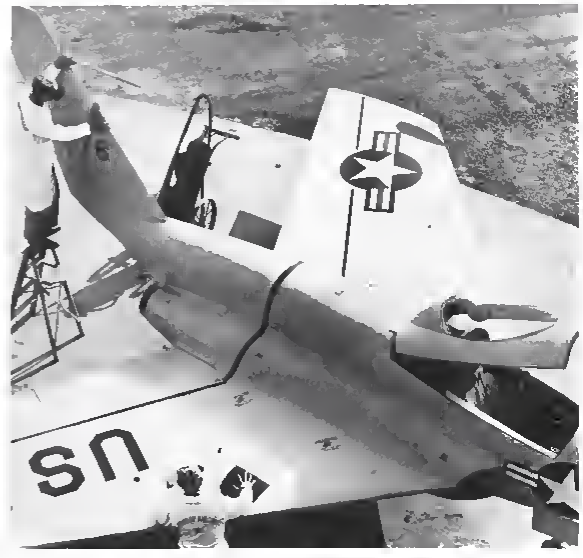
MATS estimated initial wartime air transport requirements at ten billion ton miles annually. As presently constituted MATS can furnish only 750,000,000 ton miles annually. It expects to get an additional 1,500,000,000 ton miles per year by taking over civil airlines thus leaving it some seven billion ton miles short of its necessary requirements.

▶**Cost Data**—Data presented on the effects of merger of Air Transport Command and the Naval Air Transport Service are too incomplete to show any marked trend on economy. MATS has instituted a rigid system of cost accounting but asserts that the wide disparity between NATS and ATC accounting methods makes it impossible to get any adequate cost yardstick with which to compare MATS and its two predecessors.

During its first quarter MATS was able to show a personnel reduction of 2151 and cites some specific economies effected by route and terminal facility consolidation. Total cost of MATS is running about $15,000,000 a month with a total cost reduction of $740,000,000 accomplished by the end of the initial quarter. During August, the latest figures available, MATS operated at a 72 percent load factor and average aircraft utilization of 5 hours per day. It operated C-54s at a cost of 51 cents per ton mile utilized. No figures were available on C-47 costs.

Impact of the Berlin airlift on the newly organized MATS last July resulted in reduction of Pacific transport services by 30 percent; Caribbean tonnage by 27 percent and reduction of domestic services to a makeshift twin engine operation. By the end of September MATS had diverted 80 percent of its flight personnel, 50 percent of its plane and 36 percent of its maintenance personnel to the airlift. Participation in the intensive airlift shuttle raised MATS daily C-54 utilization from 5.1 hr. in July to 11.2 in August and 14 by the end of September. At the end of September MATS had 143 C-54s and 3000 men which were committed to the airlift.

The quarterly report paid tribute to the maintenance service rendered to MATS by American Overseas Airlines, Pan-American Airways and United Air Lines on foreign routes.



NORTHROP X-4 RESEARCH PLANE FLIES

First photos of completed Northrop X-4 transonic research airplane shows unusual empennage lacking stabilizer, extremely thin wing and unusual engine mounting at wing roots. Longitudinal stability is handled by wing sweep and control is obtained by elevons. Research plane remained aloft 18 min. over Muroc Air Force Base, Calif., on first test flight with Northrop test pilot Charles Tucker at the controls. The plane is designed to investigate tailless configuration in the transonic zone (Mach number 0.8 to 1.2) and is not designed to probe the high supersonic speeds of which the Bell X-1 and Douglas D-558-II are capable. Two X-4s are on order.

Air Race Profit

National Air Races of 1948 showed a $4500 profit after final audit of its books.

Ben Franklin, Air Race manager, said the $4500 would be turned over to the Air Foundation to help cover 1947 losses incurred when bad weather washed out one day's racing program. The Air Race profit was in addition to Air Foundation contributions made to the National Aeronautics Assn., and the Air Force and Navy relief societies.

The 1949 National Air Races will be held again at Cleveland Municipal Airport on Sept. 3, 4 and 5. Primary emphasis will be on jet flying with major modifications in the racing program expected to be approved by the National Aeronautics Assn. at a meeting early next year.

How They Work . . .

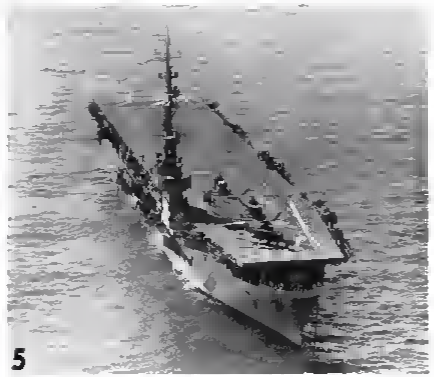
1 Special winch rig over door of HRP 1 enables a wounded man to be lifted in litter from the ground to helicopter. This is for use in extracting casualties from spots too rough for even a copter to land.

2 Sikorsky HO3S 1 fitted with a winch for lifting litters from the ground for evacuation of casualties. Carries patient in litter externally to nearest field hospital.

3 Three Piasecki HRP 1 transport helicopters of HMX 1, the first Marine Helicopter Squadron, deliver a platoon of combat marine infantrymen in 20 seconds during training maneuvers at Quantico, Va.

4 Five Sikorsky HO3S-1 go aboard the carrier Palau for a week of sea duty. Note the folded rotor blades for storage and lifting onto carrier's elevators.

5 Three Sikorskys aboard the carrier Palau in the Atlantic.



Marines Show Helicopter Uses

Tests explore military possibilities of Piasecki, Bell and Sikorsky craft; squadron will make recommendations.

By Robert Hotz

QUANTICO, Va.—The first Marine helicopter squadron (HMX-1) is giving rotary wing aircraft one of their most thorough tests for military purposes.

Organized primarily as a developmental squadron, HMX 1 is currently engaged in devising tactical uses for helicopter types now available and drawing up requirements for future types to meet specific military needs.

▶**Have Eleven Copters**—The squadron now has eleven helicopters: five double rotor Piasecki HRP 1, five four-place Sikorsky HO3S-1, and one two-place Bell Model 47. During its first year of operations the squadron logged 1363 hr in helicopters. Its machines have seen service in China, the Arctic, at sea with carriers, and on land with Marine artillery, tanks and infantry.

Col Edward C. Dyer, veteran Marine fighter pilot, has been skipper of HMX 1 since it was organized in December, 1947. Major Armond De Lalio, operations officer, is the acknowledged dean of the squadron's pilots with close to 500 hr. logged in rotary wing types.

▶**Proving Piasecki**—Much of the squadron's current work is proving out the Piasecki HRP 1, its first transport type helicopters. Squadron pilots who have been checked out on the Piasecki are impressed with its performance. They operate it at 80 mph. cruising speed, have used top speed of 120 mph. and carry a useful load (including fuel) of about 2000 lb. Sole complaint has been of excessive vibration on the helicopter in flight. New Piasecki five-place HJP 1 has a monocoque fuselage construction that eliminates much of the vibration currently in the steel tubing fuselage of the HRP 1. Marines expect to get five HJPs eventually for development work.

▶**CG Travel**—In addition to its performance characteristics the Marines like the Piasecki for its wide center of gravity travel. This they consider a must feature for all transport type helicopters planned for military use. At present the Marines are using the Piaseckis to develop new techniques for delivering airborne troops to beach heads during an amphibious landing and to airheads located far beyond enemy lines. In demonstrations at Quantico each Piasecki carried six fully equipped Marines. Three machines land a combat platoon of 18 men in 20 seconds.

The Piasecki has also been used to ferry heavy combat equipment up to 105mm guns over terrain obstacles. It is now being equipped for rescue work in rough terrain where even a helicopter cannot land to evacuate casualties. The Piasecki is rigged with a winch in its wide cargo door. A collapsible canvas litter is lowered to the ground while the helicopter hovers from 10 to 20 ft. off the ground.

▶**Carries Doctor**—The patient is loaded into the litter and the winch draws it up into the door. The Piasecki is preferred for this type of rescue work since it can hold more than one patient internally and offers sufficient space for a doctor to do emergency work such as administering plasma and treating shock in flight. Similar experiments have been conducted with the Sikorsky but the litter must be carried externally. External carrying of casualties by helicopters exposes patients to the cold blast of the rotor blades.

The Sikorskys have been used primarily for rescue work off carriers at sea and laying field communications wire in support of ground troops. All of the squadron's Sikorskys spent a week at sea aboard the escort carrier Palau last spring for experimentation with shipboard operations.

▶**Carrier Problems**—Among the problems explored were those of shipboard stowage and handling, fast take-offs and landing on rolling and pitching decks, and communications. At the conclusion of the maneuvers the Sikorskys operated a ship to shore shuttle ferrying combat personnel and equipment in support of an amphibious landing by the Fleet Marine Force. In rescue work during carrier landings and take-offs by tactical planes the Sikorskys proved far superior to the destroyers formerly used.

Maj. De Lalio flew a Sikorsky from Quantico to Los Angeles recently in 38 hr. flying time. He carried a radio range receiver but used pilotage as his primary navigation method.

▶**Bell Spotter**—The two place Bell helicopter has been used primarily for field liaison between ground troop units, artillery spotting where it can pop up and down too fast for enemy retaliation and as a spotter for tank-infantry combat teams working in rugged terrain.

Of all the military uses explored so far the Marines seem most impressed with the tactical transport possibilities of the helicopter. Their requirements for future types will probably lean heavily in this direction.

▶**Maintenance Problems**—The squadron has also done considerable work in smoothing the vexing maintenance problems of helicopter operations. After considerable difficulties in the early days of squadron a high percentage of operational machines has been maintained. The 65 hr. gear box checks required on the Piaseckis and the difficulties in getting parts for all three types are the main problems now.

Development of jet-driven rotor blades will ease most of the current maintenance headaches, according to Maj. De Lalio. Jet helicopters will also be much less expensive to build and offer considerably more utility due to their simplified maintenance, he believes. In the near future jet helicopters will be restricted to a "flying crane" type of operation to move heavy objects a short distance because of their high fuel consumption.

New Trainer Lineup For U. S. Air Force

U. S. Air Force has developed a new stable of training planes to prepare pilots and aircrews for postwar operational techniques.

Here is the new trainer lineup:

• **North American T-28**—This single engine, low wing monoplane was designed to do the job formerly handled by primary and basic trainers. Total of 266 are now on order by the Air Force.

• **Convair T-29**—This is a military version of the commercial Convair-Liner designed for twin engine pilot training and navigator training. Air Force ordered 36.

• **Douglas XT-30**—This design was runner-up in the North American T-28 in the Air Force trainer design competition. Douglas was given a contract to build an experimental mockup. Procurement of this trainer is not now in prospect.

• **Fairchild T-31**—This was originally the XNQ developed for the Navy to replace prewar primary and basic trainers. It is the first trainer to use the Air Force-Navy standardized cockpit. The plane is now being procured by the Air Force, which has already allocated funds for the initial production order of 100.

• **Convair T-32**—This is the bombardier trainer version of the Convair-Liner. Air Force has ordered only a prototype. Extensive engineering changes are required in the original Convair Liner design to produce the T-32. Delivery of the prototype may be a year away.

• **Lockheed TF-80**—The only two-seater jet trainer now in production. Air Force has ordered 156.

Foreign Pilot Training

Saudi Arabia plans to train about 20 pilots and copilots in the U. S. for civil airline operations in the Middle East.

New Orders

Northrop, Fairchild and Lockheed get business totaling $110 million.

Lockheed, Northrop and Fairchild will share the latest U S Air Force procurement allocation of $110,000 000 for 258 planes At the same time Republic Aviation Corp was cut back $30,000, 000 (100 planes) on its latest allocation for F 84 Thunderjet fighters.

Further details on the USAF procurement shifts (forecast in AVIATION WEEK, Dec 20) include a decision on the new USAF all weather jet fighter and another step toward joint USAF-Navy procurement of aircraft

The new allocations

▶ **48 Northrop F-89**—This all weather jet fighter (AVIATION WEEK, Sept 27) has been selected as the primary jet replacement for the Northrop F 61 and North American F-82, piston engine night fighters now in service First experimental prototype of the F 89 has been undergoing flight tests at Muroc since last August Second model has been completed by Northrop and is awaiting shipment to Muroc.

Production on the F 89 is at least 18 months distant Initial order is aimed at getting production under way and more orders for the F-89 are scheduled for the future to meet the recently increased USAF requirements for all-weather fighters The F 89 is one of the heaviest fighters ever built with a gross weight of 32,000 lb

▶ **110 Lockheed F-94**—This is an all-weather fighter version of the TF-80C, two seater jet trainer It is aimed at filling USAF jet night fighter needs until the F 89 production gets under way The F 94 will have a radar operator replacing the student pilot in the second tandem seat and add about 3000 lb of radar gear to its normal 13,000 lb gross weight USAF has been experimenting with the TF 80 as an all weather fighter at Muroc

The new Lockheed fighter solves the problem of fast rate of climb, relatively light weight, and maneuverability that has been perplexing USAF experts in their search for the best all weather fighter design However it cannot carry the weight or bulk of the latest electronic equipment Lockheed also has USAF contracts for F 80 fighters, TF-80 trainers and C-121 transports It is building P2V patrol planes for the Navy

▶ **100 Fairchild T-31**—The T-31 will be a slightly modified version of the XNQ tandem trainer developed originally for the Navy Two XNQ's were delivered to the Navy a year ago and one was subsequently turned over to the USAF for evaluation Navy will also buy substantial quantities of the T-31

The T-31 will be used as a primary trainer with the North American T 28 as a basic trainer and tactical type planes as advanced trainers The XNQ weighs 3700 lb, is powered by a 285 hp Lycoming engine turning a Hamilton Standard hydraulic, constant speed propellor, and features the standardized "safety" cockpit designed by the Navy's Bureau of Aeronautics It cruises at 120 mph Fairchild is also building C 119, improved Packet transports, for both the USAF and Navy

Funds for the new aircraft allocations came from $80,000 000 recovered in cancellation of a letter of intent for 88 F 87 all weather jet fighters to be built by Curtiss Wright's Airplane division and the $30 000 000 cutback in Republic's F-84 production

Manufacturers Study New Cost Principle

Aviation manufacturers contracting with the USAF and the Navy are studying prospective contracts in the light of the new Section 15, Armed Services Procurement Regulation (AVIATION WEEK, Dec 20) which allows some additional leeway in determining reasonable and necessary costs

Compliance with Section 15, titled "Contract Cost Principles," is authorized from the date of issuance (Dec 15) and compliance becomes mandatory beginning Feb 1.

▶ **New Allowable Costs**—Principal cost items now allowable under Section 15 state income taxes, use and occupancy insurance; ordinary local charity and community benefit donations, charges for depreciation on fully depreciated assets, advertising in trade and technical journals (allowable on research and development and supply and material cost contracts), advertising for help wanted and for disposition of facilities and scrap and other waste materials

New Section 15 was developed by the Armed Services Audit Coordination Committee and has been adopted by the Air Force, Navy and Army departments after coordination by the Munitions Board

▶ **Costs Standards**—Section 15 in general sets forth standards for costs to be allowed in connection with the performance of cost reimbursement type contracts, and subcontracts

Exception is made in the case of contracts with predetermined overhead rates Contractor in this case will use applicable provisions of Section 15 as a basis for negotiating the rates while following provisions of the section for other cost items.

Cost reimbursement type contracts are defined as cost or cost sharing contracts, cost-plus-fixed-fee contracts, and the cost reimbursement portion of time-and-materials contracts.

Commercial manufacturers with a profit motive will be principally interested in Part 2 of the Section which sets forth cost principles for supply and research contracts with commercial organizations

▶ **Research Contracts**—Part 3 deals with cost principles for educational or other non profit institutions with cost sharing contracts for research and development The final Part 4 deals with costs for construction, architectural and engineering services Each part specifies a list of items which are defined as allowable and another list of items which are not allowable in determining contract costs.

Among allowable items listed (in addition to those above) for supply and research contracts with commercial organizations bonds and insurance, compensation of corporate officers, executives and department heads, directors and executive committee fees and expenses, stockholders' meetings, annual reports, reports and returns to governmental authorities, registry and transfer charges for securities issued, freight, transportation and material handling, improvement of working conditions, jigs, dies, fixtures, patterns, drawings, special tools; legal accounting and consulting services, manufacturing and production engineering, materials and supplies, memberships in trade organizations, office expenses, overtime compensation, patents, and royalty payments, recruiting and training personnel, plant maintenance and protection, research and development specifically applicable to the contract; salaries and wages, subcontracts and purchase orders, traveling expenses, vacation holiday, and severance pay, sick leave and military leave

▶ **Items Rejected**—Items not allowed include other advertising than that noted above; amortization or depreciation of unrealized appreciation of values of assets; bad debts; commissions and bonuses in connection with obtaining a government contract; contingency reserves, contributions except as noted above dividend payments, entertainment, federal income and excess profit taxes, general research, and interest on borrowing Also not allowed

Legal, accounting and consulting services and related expense in connection with organization or reorganization, patent infringement, antitrust suits or claims against the U S, losses from sales or exchanges of capital assets, losses on other contracts, maintenance, depreciation and other costs incidental to excess facilities, insurance premiums where contractor is beneficiary, selling and distribution not related to contract, taxes and expenses relating to financing, refinancing or refunding operations

PRODUCTION

Aluminum Short

Tight supply situation to continue with main pinch early in year.

Despite forecasts early in 1948 that supply of aluminum would be adequate, the shortage did not ease and now is expected to continue next year. The first months of 1949 are expected to be the worst—just when aircraft manufacturers should be hitting their stride on the new production orders

Production of the primary metal in 1948 was about 1,245,000,000 lb Although government sources figure 1949 output will approximate 1,220,000,000 lb aluminum industry officials think this is too high. They point out that the floods which crippled production in the Pacific Northwest hit late in 1948 and pulled the year's total down for only several months

Next year, however, these facilities will be out for a longer period. That, combined with usual winter power troubles, and the loss of the Aluminum Co of America's 40 million lb output at Niagara is going to make the first part of 1949 much worse than 1948 The year's demand may exceed domestic production by more than a half billion pounds

Main impact of the aluminum shortage will depend upon imports from Canada Canadian producers have been selling the bulk of their production to ECA countries, and shipments next year are expected to increase or at best remain at this year's level.

An ECA crack-down on grants going to England, Holland, and Belgium for purchase of aluminum during the first two quarters of next year may improve the supply slightly here ECA staffers in Washington spent months checking export-import figures on the metal They found that substantial percentages of exports to the needy countries were coming back to the U S in one form or another The ECA reaction was that "this proves that these countries are getting more of the metal than they need." So, Washington has cut back shipments of the metal to the three countries The cuts will be greater than the percentages found to be coming back from abroad

Other intangibles such as a continued shortage of electric power in the Pacific Northwest where Alcoa has already lost two potlines because of the shortage, strikes, and floods will contribute to the scarcity of the light metal.

Plane makers are least likely to be hurt in the shortage In the event that the Congress allows reinstitution of "wartime" mandatory allocation and conservation controls, they will have top priority.

Manufacturers Indicate 1949 Employment Rise

Aircraft employment is at its highest peacetime level, and going still higher.

In the present tight labor market, these are the best prospects for filling additional jobs opening up in the industry, the wartime aircraft workers who went into other industries after the war; and the women who returned to the home after their aircraft jobs were terminated.

That is the opinion of Robert C Goodwin, director of the U S Bureau of Employment Security and former head of USES.

A BES survey of 54 aircraft manufacturing plants showed employment had risen from 193,000 in June to 204,-000 in August These same plants indicated they would need another 15,000 by February

Goodwin said overall expansion would continue another six months, but he does not expect large volume employment gains to begin until well into next year As is usually the case in this kind of situation, there is a shortage of skilled workers.

More than 2,000,000 once were employed in aircraft during the war Goodwin said in a report to Federal Security Administrator Oscar R. Ewing.

Hoppi-Copter, Jovanovich Merger Being Discussed

D K Jovanovich, president of the Helicopter Engineering & Research Corp of Philadelphia, will arrive in Seattle, Wash, shortly to discuss a possible merger of his company with Hoppi Copters, Inc, according to Horace T Pentecost, president of the Seattle firm

Jovanovich will have his JOV 3 helicopter with him and demonstration flights will be made by George Townson, pilot

If the merger is agreed upon, certification of the JOV-3, now 10 percent along, will be completed at Seattle At least three models will be constructed at Pentecost's Seattle shops and commercial production also possibly might be started there on a small scale, after certification

Further development of Pentecost's Hoppi-Copter is being carried out in England, leaving Pentecost free for other work

The JOV-3 is a two place, cabin craft with two rotors, fore and aft, with a proposed $10,000 selling price.

WHO'S WHERE

Lockheed Aircraft Corp, Burbank, Calif appointed Carl F Schmidt to the new position of airline operations engineer, in which he will assist customer airlines in developing procedures and techniques for most efficient operations . Rogers Donaldson, company's eastern district manager, has resigned to become general counsel for the American Optical Co, Southbridge, Mass.

Republic Aviation Corp, Farmingdale, N Y, named Robert S Fogg to the sales staff as liaison with the Air Force operating units that are equipped with F-84 fighters. Fogg, former Air Force major, recently was manager of commercial float sales division of Edo Corp

Stratos Corp, Farmingdale, N Y., elected J Carlton Ward, chairman and Lawrence B Richardson, president, the same positions they hold in the parent company, Fairchild Engine & Airplane Corp F Eugene Newbold, Jr, was named Stratos general manager effective Jan 1.

Westinghouse Electric Corp. named James W Patkin manager of manufacturing for the aviation gas turbine division in Philadelphia A longtime Westinghouse employe, he succeeds Samuel S Stine, who will manage the new Kansas City jet engine plant

Koppers Co. appointed McMillan Robinson sales manager for the metal products division, which includes two Baltimore plants, one manufacturing Aeromatic propellers

Stewart-Warner Corp. named Arthur R Collins general manager of the South Wind heating division at Indianapolis. He has been head of the division's manufacturing and engineering E L Sandberg has been appointed assistant general manager, and T M Redmond plant manager

Lockheed Aircraft Service named Marc Worst as operational director of the two bases at MacArthur Field, Sayville, N Y, and Burbank, Calif

Doman-Frasier Helicopters, Inc., Danbury, Conn, appointed Alan R Bott director, research engineering He has been a Navy test pilot

Pacific Airmotive Corp. appointed Floyd G Gustafson general manager of the Linden, N J., branch.

Dimensions Standardized by World Lines

Choice of measurement units allowed initially. Plan final in 10 years.

A wide gap in the practices of world air carriers will be bridged when the initial phase of the new plan for standardization of dimensional units as proposed by the International Civil Aviation Organization goes into effect on Jan. 1, 1949.

Universal standardization of dimensional units has for some time appeared as an unattainable goal for science and industry. Only recently, the announcement that Great Britain and the United States have standardized the screw threads of nuts and bolts used in these countries, was heralded as a major achievement.

It was, therefore, a highly significant step when ICAO proposed to its 48 member States a 10-year plan under which all dimensions used in today's aerial navigation would become standardized.

As could be expected the majority of the units appearing in the final ICAO table are in the metric system. The time schedule and units involved appear in the tabulation accompanying this article.

► **Plan Details**—The problem of dimensional unification was first considered at the Chicago Aviation Conference in 1944. More recently, nations had not been able to accept the original ICAO proposal of May 1947, which was essentially a compromise between the metric system and the foot-pound-second system.

For this reason the current plan provides five separate tables of units, including the ICAO table from which each member State is required to select one for use by its ground stations for air-ground communication in international air transport.

Each aircraft will carry conversion tables but in event of emergency the ground station will transmit information in the units requested by the aircraft's crew.

Two years after the new standard goes into effect, the number of dimensional tables will be reduced to three; after five years, to two, and on January 1, 1959 the ICAO table will be the only one in use.

► **Effect of Plan**—The impact of the adoption of the ICAO dimensions on the U. S. flag carriers and on certain affected government agencies will not be as great as might appear at first glance.

Changes would be reflected in:

- Instrument recalibration
- Dimensions appearing on maps, charts and operational handbooks
- Flight crew training
- Control tower personnel training.

Initially, no instrument recalibration would be required of American international airlines since the Yellow ICAO plan (adopted by U. S. carriers) utilizes dimensions currently employed on all instruments installed in present day aircraft.

In the case of converting temperature gages, a simple replacement of the fahrenheit scale with one calibrated in centigrade units will suffice.

Airspeed indicators calibrated in knots are already installed in a majority

ICAO DIMENSIONAL STANDARDIZATION

Each State shall select and use one of the following tables of units in messages containing dimensional units transmitted by each aeronautical station under its jurisdiction in the International Telecommunications Service

Dimensions	Yellow	Red[1]	Green[2]	Blue[3]	ICAO Table of Units[3]
Distances	Statute miles	Kilometers	Statute miles	Nautical miles & tenths	Nautical miles & tenths
Altitudes, elevations and dimensions on airports and short distances	Feet	Meters	Feet	Feet	Meters
Horizontal speed	Statute miles per hour	Kilometers per hour	Statute miles per hour	Knots	Knots
Vertical speed	Feet per minute	Meters per second	Feet per minute	Feet per minute	Meters per second
Wind direction and wind speed	Degrees & statute miles per hour	Degrees & kilometers per hour	Degrees & statute miles per hour	Degrees & knots	Degrees & knots
Cloud height	Feet	Meters	Feet	Feet	Meters
Visibility	Statute miles (or fractions)	Meters (or kilometers)	Statute miles (or fractions)	Nautical miles (or yards)	Meters (or kilometers)
Altimeter setting	Inches of mercury	Millibars	Millibars	Millibars	Millibars
Temperature	Centigrade	Centigrade	Centigrade	Centigrade	Centigrade
Weight	Pounds	Kilograms	Pounds	Pounds	Kilograms
Time	24 hours, the day beginning at midnight Greenwich mean time	24 hours, the day beginning at midnight Greenwich mean time	24 hours, the day beginning at midnight Greenwich mean time	24 hours, the day beginning at midnight Greenwich mean time	24 hours, the day beginning at midnight Greenwich mean time

PROPOSED TIME SCHEDULE

[1] Tables YELLOW and RED are not to be employed after Jan. 1, 1951
[2] Table GREEN is not to be employed after Jan. 1, 1954
[3] Table BLUE and ICAO Table of Units may be used until Jan. 1, 1959. After that date, ICAO Table of Units is the only dimensional system to be used

of aircraft flown on international routes, and also on most military aircraft.

With altimeters, although the basic instrument would not be affected, a new gearing mechanism between the bellows and the pointers would be required, as well as a new dial calibrated in metric units. However, since metric altimeters have already been built in small quantities for the past several years, the manufacturers indicate that the changeover would be relatively simple.

▶ **Changeover Factors**—The instrument industry does not believe any difficulty will arise because of the requirement that they supply instruments in both foot-pound-second and metric units. They have indicated their willingness to supply whatever instruments the aircraft industry and airlines require.

It is interesting to note, in this connection, that of the 3646 transport aircraft of principal types in service on the scheduled airlines of the World, slightly less than one-third are operated domestically in the U. S. (AVIATION WEEK, Nov. 22, 1948).

With respect to Coast and Geodetic charts and maps, it would appear feasible at the outset to overprint the new dimensions on the charts until such time as it becomes practical to reprint them entirely, using the ICAO dimensions.

▶ **Personnel Considerations**—Eventual indoctrination of flight crews in the metric system will present more of a problem to the U. S. international carriers than to the foreign, to most of whom system is native.

Nonetheless, as was proven during the war, persons familiar with the American system only, will be able to acquaint themselves with metric units in a matter of two or three weeks if provided proper instruction, therefore this facet of the problem will resolve itself without undue difficulty.

The question of re-orienting control tower personnel is even less complicated, since, again most foreign operators will be conversant with the metric system. The only American personnel affected would be those at the relatively few fields served by the international carriers.

Practical advantages of the institution of a standard set of dimensional units, such as the elimination of confusion between air and ground crews, the undeniable increase in operational safety, especially under emergency conditions, and the obviously desirable fact of universal standardization would seem to outweigh, by far, any temporary inconveniences and financial outlays required to put this proposal into effect.—George L. Christian III.

"Postformed" Plastics Cut Costs

North American F-86 jet fighter contains more than 75 parts made of "postformed" laminated plastic, a new development in the plastics field, which reduces manufacturing expense.

As shown in the accompanying illustration, these parts include ammunition case and link ejection chute assemblies, cockpit control panels, access doors and a wide variety of cover plates and antichafing panels.

▶ **Step Saved**—"Postforming" consists of using previously cured laminated plastic sheet as raw stock. This eliminates the primary step in plastic parts fabrication—heat-set—and enables the aircraft manufacturer to start his operation one step farther along the process, thereby affording savings in cost and fabrication time.

The sheet stock, a pre-cured, fabric-base plastic, is cut to shape and heated to a formable condition. This operation must be carefully controlled, because insufficient heating can cause the piece to crack when formed, and excessive heating causes blistering.

▶ **Heating Methods**—Radiant heating with infra-red lamps, circulating hot air, hot plate contact and liquid immersion are some of the applicable methods.

In a hot air oven at 500 F., a 1/16-in. sheet of forming stock is ready for forming in just 45 sec.; a ⅛-in. sheet requires only 5 min.

After heating, the pliable sheet is formed to shape in molds or on bending forms of wood, metal or plastic. Pressure required for this operation varies from only a few pounds for simple bending of thin sheet to several hundred pounds for deep drawing of thick sheets.

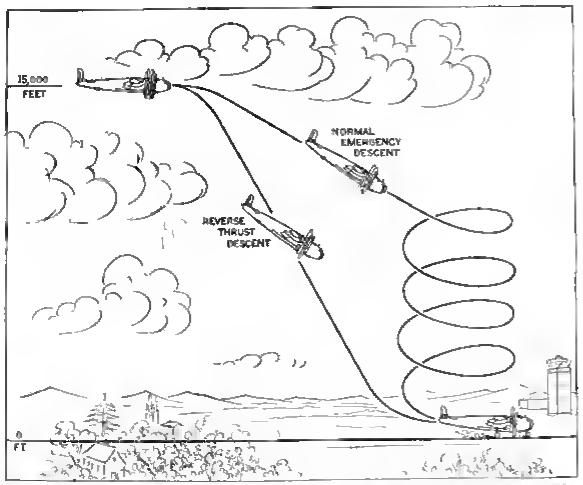
The part is left in the form until cooled and hardened, usually from 30 sec. to 4 or 5 min., depending on the thickness of the sheet. The postformed part may then be machined, drilled or routed.

Cuts Sheet and Plate

Sheet and plate working machine that does beading, folding, and straight, circular or design cutting of metal up to ⅛ in. thick is announced by Pullmax Co., 5222 North Spaulding Ave., Chicago 25, Ill. Cutting is accomplished by two tools, upper one operating at very high rpm. Claim is that metal being worked does not chip or deform, finished edges are smooth and perpendicular and need no reworking. Cutting tools do not penetrate metal, but shear it to breaking point, affording smooth cut. It's reported that mild and stainless steel as well as non-ferrous metals can be cut into intricate designs by unskilled labor after little practice. Quick-locking centering device permits fast production of circular plates. Variety of tools may be used for many special operations, such as slot cutting, nibbling, beading, and folding. Seven sizes of machine are available for working various gages.

Reversible Props Brake Plane In Dive

Test ship with all four propellers in reverse pitch trails smoke to accent its steep letdown for comparison with normal emergency descent of similar craft seen above it



This sketch of comparative emergency drops points up how in-flight prop-reversing permits direct descent while conventional procedure employs winding letdown

Procedure used in 40 deg. descent of C-54 from 15,000 ft.

By Irving Stone

The potential of reversible pitch props to permit rapid, controlled descent of aircraft in emergency and procedural letdowns was strikingly shown at a recent demonstration conducted at Curtiss-Wright Corp.'s propeller division at Caldwell, N. J.

Starting at an initial altitude of 15,000 ft., a C-54 was put into a dive of approximately 40 deg. with all four propellers in reverse pitch for air braking effect. Touchdown was accomplished in a little more than 3 min. from the start of the dive.

▶**Comparison Procedure**—The exhibition was conducted using two planes—one, a USAF C-54 test ship piloted by Herbert O. Fisher, C-W chief test pilot, the other an American Airlines DC-4 piloted by Capt. Harry Clarke, to give comparative data for emergency letdown without reversing the propellers in the air.

The two planes rendezvoused at the 15,000-ft. altitude about five miles distant from the airport. Just before the start of the test, which was signaled by radio from the air, the C-54 gave a clear trace of its flight path with a trail of white smoke from its tail.

At the prearranged signal, both craft began the emergency letdown, the test ship with all four propellers in reverse pitch and its 40-deg. angle of descent outlined boldly against the sky by the trailing line of smoke.

▶**Dives for 90 Sec.**—Pullout for the C-54 was effected at 1000 ft. and elapsed time was stopwatched at 1 min., 30 sec. for the 14,000-ft. descent. Total elapsed time to runway touchdown was 3 min., 8 sec.

Coming down from 15,000 ft., the American Airlines DC-4 descended in tight spirals, touching the runway in 5 min., 1 sec., stopwatch time.

Unofficial observers timed the test ship's descent to 1000 ft. at 1 min., 22 sec., and to touchdown at 2 min., 55 sec. For the AA DC-4, unofficial timing was 4 min., 48 sec. until touchdown.

For the first 5000 ft. of descent, speed of the test ship was 200 mph. (indicated), and remainder of drop was at about 190 mph. Rate of descent was estimated to be about 10,000 ft. per min. Rate of descent for the AA craft was estimated at 3500 fpm.

▶**Commercial Aspects**—Pilot Herb

Fisher told AVIATION WEEK that he wasn't particularly conscious of any adverse physical effect during the dive. At moment of changeover to reverse pitch there is a slight deceleration, he said.

He did stress the point this letdown procedure is still experimental and is not yet ready for operational use with other planes equipped with reversible pitch propellers. Ground reversing (AVIATION WEEK, Dec. 15, 1947) has been in commercial use for more than a year.

The test ship installation is controlled to give constant speed in reverse—a feature which commercial craft with reverse pitch props don't have.

Also, a plane such as the DC-6 would probably require a somewhat stronger propeller to accommodate the additional loads imposed by its higher speed.

Curtiss-Wright officials feel that about 1 to 2 years of study and refinement will probably be required before CAA approval is likely to be obtained.

▶**Specific Applications**—The reverse-pitch letdown would seem to have definite advantage in the event a failure occurred in the pressurization of a commercial craft at high altitude. Another benefit might be derived in its application for bringing in planes quickly from a stacked condition over an airport.

The procedure might also be applied to allow high flying craft to traverse almost their entire course at most efficient altitude.

Actual reversing of propeller pitch is accomplished rapidly. On the B-36, where ground reversing only is employed, the change is said to be about 17 times faster than normal pitch change.

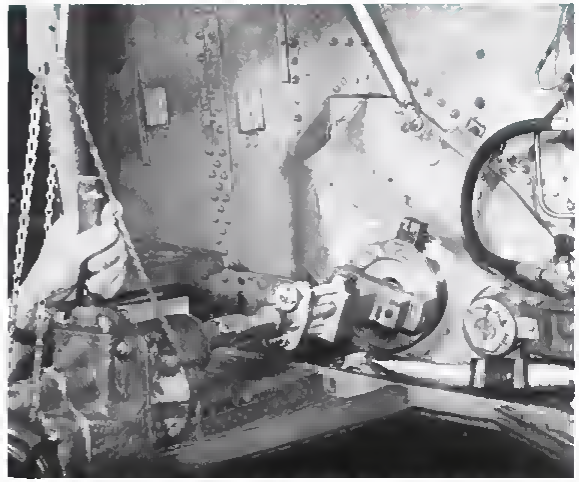
Angular rate of reverse pitch change is about 45 deg. per sec. as against some 2-3 deg. for normal pitch change.

Simple Process Cuts Costs

A new method for salvaging aircraft engine exhaust system parts has indicated savings of over $100,000 yearly at the Fairfield Suisun Air Force Base, Calif.

Devised by Ward Barnes, base shop civilian foreman, the process frees used ball-joint stack connections. Commonly known as slip joints, these parts consist of two sleeve-like pieces and range in price from three to nine dollars, depending on size. Several joints are used in each exhaust system.

In prior practice, sleeves were discarded when the joints froze and became unusable. Now, they're simply furnace-heated for five minutes, then dropped into a water bath for quick cooling. This action of expansion and contraction gives enough space between the sleeve and elbow for movement. After a few touches of light oil and some manipulation, the connections ready for use.



Massive landing gear attachment fitting is jig bored after assembly to structure. Conventional pneumatic power tool turns boring bar. Universal drive permits offset.

Costs Cut With Portable Jig Bore

A new portable jig boring tool, developed at Consolidated Vultee Aircraft Corp. to expedite precision work on forgings or castings assembled on major aircraft components has saved thousands of dollars in production costs at Convair's Fort Worth, Texas, and San Diego, Calif., plants.

The comparatively simple device can be built for about $300, will perform boring to tolerances of ± .0025, and is adaptable for a large number of complex jobs.

▶**Components**—Invented by J. B. Davis, C man tool operator and jig constructor, the portable unit comprises a block base with a face-normal alignment hole, calibrated disk for feeding the cutting tool, concentric boring bar with universal drive joint at one end, and cutting tool insert at other end, and balanced feed arm for rational cutting and feeding speeds.

Auxiliary attachments include a drill and adapter bar, step pin ended bar, boring bar with adjustable tool attachment, pick up bar for tooling buttons and set-up adapter plate.

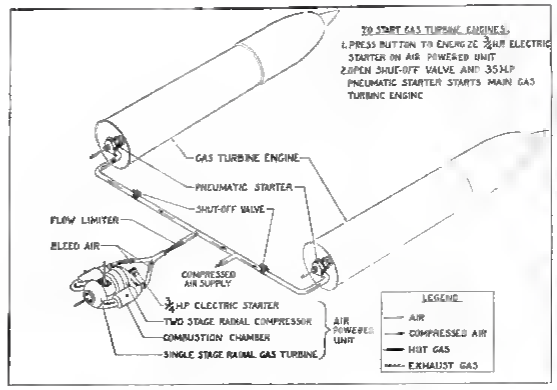
Drive for the lightweight tool is via conventional electric or pneumatic hand motor.

▶**Benefits Derived**—In prior practice Convair had to locate and fasten certain workpieces and jigs on the surface tables of large standard jig boring machines frequently, this involved costly disassembly of the part from its major component. And setting up the jig bore consumed many man hours, and took the machine out of regular production work.

Also, some jobs, because of their size, could not be adapted to standard machines and had to be shipped to outside shops for working. Other jobs required large jacks involving damage risks in handling.

The new portable tool's utility is highlighted by these savings reported by Convair. A job on an engine mount tie in bolt hole which would have taken, normally, at least a week, was accomplished with the device in 3 hr. Another job on a large welding fixture involved the boring of five holes normal to the surfaces and maintaining all set positions. It would have required about 150 hr. to complete the work in the usual manner, but with the portable jig bore it was found that less than 6 hr. were needed.

Because of its special adaptability to jobs on components too large to handle on stationary boring machines and to fittings installed on major assemblies, this portable unit should find ready application in various industrial activities—tool rooms, engine repair establishments, machine and jig shops and other metal-working functions.



Main components of starting system (shown schematically) are air turbine (held in hand) and 88 lb., bleed-off version of gas turbine

Starter Developed For Turbine Engines

High-speed pneumatic unit operated by air bled from small, lightweight, centripetal-type turbo installation.

By Robert McLarren

AiResearch Manufacturing Co. has developed the first self-contained, self-starting system for turbojet and turbo prop-powered aircraft. It requires no external source of power for operation, and offers a 20-percent reduction in weight and 75 percent increase in starter power output over present starting systems.

In addition, its flexibility enables its output to be used for a variety of other purposes aboard a jet aircraft.

Unique feature of the new unit is a "radial inward flow" turbine, the first of its type ever operated in this country.

▶**Turbine Starting Factors**—Power required to start a gas turbine engine has proved to be considerably greater than that for a reciprocating engine.

Two factors create this problem—(1) The gas turbine must be turned up to about one-third rated engine speed before enough compression is generated to operate the combustion chamber, whereas the reciprocating engine must only be turned a portion of one revolution to enable a single cylinder to fire, and (2) the "drag" of the gas turbine engine consists of air resistance within its blading and air passages, whereas the reciprocating engine "drag" is only that of a single cylinder on compression stroke.

Starters for reciprocating engines have an output of from 2 to 4 hp., while jet or turboprop engine starters require an output of from 10 to 250 hp.

This large power requirement cannot be solved by the use of battery capacity alone without increasing the weight of the battery and electric starter combination to impractical values.

One solution to this problem is the use of an external battery cart and, while this system is widely used on large Air Force installations, its use aboard a carrier presents problems of space, weight and interference on the flight deck during operations.

▶**Services Conduct Studies**—It was to find solutions to this problem that the Navy Bureau of Aeronautics began a study of jet aircraft starter systems in 1945. During the ensuing years, they have examined every conceivable type of starter, including: Electric (low voltage d.c., high voltage d.c., variable voltage d.c.), solid propellant, steam (positive displacement and turbine), direct impingement (steam obtained from decomposition of hydrogen peroxide, compressed air, and exhaust gas from a small turbojet engine), internal combustion engine and pneumatic.

The Navy program has cost thus far, an estimated $2,000,000.

And the Air Force has investigated hydraulic and 3 phase, 400c.p.s. electric starter systems under a coordinated program.

Development on several of these types is continuing but the AiResearch pneumatic system is considered the best to date and is now ready for production installation.

▶**Background**—The AiResearch starter unit is actually an outgrowth of an original Navy project awarded in June, 1946, for the development of a small gas turbine-driven auxiliary powerplant.

In January, 1947, BuAer expanded the original project to include its application to jet engine starting to meet the need in a new multi-jet Naval aircraft still in development.

AiResearch engineers, under W. R. Ramsaur, chief engineer, enlarged the unit's compressor, made minor alterations and produced the present device, which has completed a 200-hr. endurance test (50 hr. more than required for turbojets) including an overspeed test not required of jet engines.

▶**Components**—The system consists, basically, of two separate units. Power source producing a supply of compressed air and a small air-operated starter.

The basic power unit may be used to supply air to two-, four-, six-, or eight-jet aircraft. In addition, after the start has been made the air supply may be used to drive air-operated alternators, generators or motors, engine accessories such as fuel, oil, vacuum or hydraulic pumps and for cabin air conditioning. The exhaust gases from the turbojet section of the starter unit may be used to provide wing deicing and ground or air heating.

▶**Uses Miniature Jet**—The basic power unit is, essentially, a miniature turbojet using the aircraft's regular fuel supply.

Air is taken aboard through a vertical inlet located in the middle of the en-

gine and routed forward through a two-stage centrifugal compressor unit having a pressure ratio of 2 87 and delivering air at its outlet at 36 in Hg (42 psi) under standard conditions

It is this air that is routed to the starter mounted on the aircraft's jet engine

Remainder of the air is ducted rearward through two combustion chambers, mounted on either side of the unit, and thence into the tons of the turbine This centripetal turbine was originally developed by Schmidt in Germany and features the flow of combustion gases from the outer rim inboard to the outlet at the turbine center

The Schmidt turbine was adopted after extensive tests had determined that axial flow turbines demonstrate poor efficiency in small sizes The high speeds associated with these small units create extensive losses to which the Schmidt turbine is not subject However, as the size of the Schmidt turbine is mereased it loses out in the efficiency race with the axial flow

▶ **Operation**—The starter unit is energized by a 24v, 100 amp, ¾ hp electric starter (instead of the 20-hp. unit used for direct starting of present jet engines), which accelerates the unit to about 6000 rpm, when its combustion chambers fire

The unit is then accelerated to 40,000 rpm by the miniature turbine, at which speed 66 hp. is developed At this point, the valve to the starter is opened and high pressure air energizes the air starter, which weighs 20 lb and develops 35 hp This air turbine turns the aircraft jet engine up to about one-third rated speed (2300 rpm in the case of the Westinghouse J 34 used by the Navy) at which point the main turbine start is made

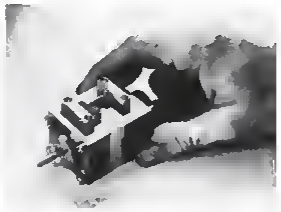
The AiResearch unit is not intended for installation on presently operating aircraft but two different sizes are being used in two new Naval planes, as yet unannounced with multi jet units

In addition the same unit has been redesigned to deliver 85 hp to a shaft for driving accessory units This auxiliary powerplant version weighs only 95 lb Still other units are being developed in various sizes to provide both starting and accessory drives for several different size and type Naval aircraft

Hiller Price Set

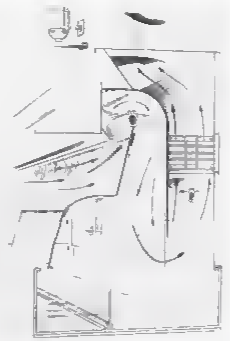
United Helicopters, Inc, Palo Alto, Calif, announced officially that price of the Hiller 360 utility helicopter will be $19,995 United has launched a far flung subcontracting operation and has plans to assemble two helicopters a day when full production schedule is achieved

NEW AVIATION PRODUCTS



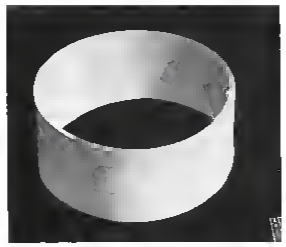
Small Servomechanism

Compact, clutch brake type servo mechanism, Model 183 1, is announced by **Buehler and Co.**, 1607 Howard St, Chicago 26, Ill, for aircraft, computer, process control, remote positioning, and similar installations Clutch brake principle is stated to offer high accuracy servo performance with superior speed and torque outputs for unit of this size and weight Input is supplied to side gearing, allowing for convenient stacking of several servomechanisms from one input shaft Output is taken from center shaft Device is available separately or is furnished as complete packaged servomechanism with suitable amplifier for operation from power sources of various frequencies and voltages



For Spray Jobs

In new Dynaprecipitor" booth made by **Binks Mfg Co**, 3114 Cartoll Ave, Chicago 12, Ill, overspray and fumes are carried off through unbroken curtain of water and treated to five successive scrubbings to remove and collect paint solids and pigment for disposal or reclamation. Claim is that no paint particles ever reach exhaust stack to deposit on fan blades to throw them out of balance or form accumulations on surrounding surfaces With thorough washing of fumes and dilution with large volumes of air, atmospheric pollution is reduced to minimum. Exhaust air passes through eliminator plates before it reaches stack for removing practically all moisture from washed air



Flexible Duct-Connections

Designed for use in aircraft ducting systems, Fiberglas-reinforced, silicone-rubber, flexible sleeves made by **Connecticut Hard Rubber Co.**, 407 E Street, New Haven, Conn, are stated to function for passage of air at temperatures of 550 F, withstand internal pressures of 5 to 10 lb without leakage, and remain flexible down to —75 F. Specification calls for test to subject sleeve to —65 F for a period of 50 hr, followed by 500 hr of 400 F and 5 hr. of 450 F without failure

Hard Surfacing Powder

Applicable to forming dies, drill bits, etc Surfaceweld A, offered by **Lincoln Electric Co**, Cleveland 1, Ohio, is powder for depositing thin chromium carbide type of hard surface highly resistant to abrasive wear and corrosion Material is designed for uses where hard surfacing electrodes are not always practical, such as in thin work, for thin deposits, or for use with small a c welders It may be used with a c arc with single carbon electrode, applied with twin carbon arc or employed with d c, carbon electrode negative Hardness of deposit, approximately 54 61 Rockwell C for one layer and 57 63 for multiple layers, depends somewhat on amount of mixture

Carriers Show Quarter Gain

Eastern profits move well ahead of last year; carriers gain confidence, despite approaching winter.

Significant recoveries in airline earning power are evident in the release of recent quarterly reports by the separate carriers. There is lack of a uniform trend among the group. A highly selective pattern characterizes performance of the individual companies.

Eastern Air Lines continues to lead the industry from the standpoint of genuine earning power. As reported to the New York Stock Exchange, Eastern shows net earnings of $762,578 for the nine months ended Sept. 30, 1948. This compares with the reported earnings of $409,809 for the same period a year ago.

►**Understatement**—The Eastern earnings, however, are understated for the current nine month period. Excluded from current accounts is approximately $485,000, net after taxes, representing the additional mail revenues granted the company by the Civil Aeronautics Board's show cause order of April for the "Big Five." Eastern has also created a reserve for advertising amounting to $1,066,000 as of Sept. 30, 1948, which was non existent during 1947. For rate purposes, CAB disallows such reserves, preferring that advertising expenditures be charged to current accounts as used.

With these two adjustments, Eastern's revised earnings for the first nine months of this year may be stated at $2,313,578 rather than the $762,578 reported.

Eastern also follows the conservative accounting practice of using a reserve for overhaul of flying equipment. This reserve amounted to $1,538,000 as of Sept. 30, 1948 and compared with $1,096,376 as of Dec. 31, 1947. Another conservative practice on the part of Eastern is to depreciate its Constellations over a four-year period. The CAB in its mail rate determinations has established a seven year base as proper for this purpose.

►**Low Interest**—Eastern currently enjoys the lowest interest cost on any loan accommodations granted an airline by the banks. Under a revolving bank agreement of Dec. 31, 1946, Eastern can draw up to $20 million before Dec. 31, 1948, at the interest cost of 1¼ percent per annum. Following an initial borrowing of $5 million in June, 1947, the company did not draw any additional funds until August of this year, when $2 million was drawn and advanced to Lockheed to help finance the airline's order for five Constellations to be delivered early next year. According to reports to the Securities and Exchange Commission, another $7 million was drawn down in October, bringing total borrowings to $14 million.

It is probable that the recent borrowings represented a technical move to implement certain provisions of the loan agreement so that the company may have benefit of low interest charges beyond Dec. 31, 1948. Any loans outstanding at that date may be funded on a three year basis at an interest cost of only 1¾ percent annually.

With its fourth quarter generally a highly profitable period, Eastern may well show "adjusted" net earnings for 1948 more than double the $1,259,196 disclosed for 1947.

►**Recovery**—American Airlines also is displaying a strong basic recovery in operating results. The company reported a net profit of $1,069,086 for the third quarter of 1948 as compared with $1,272,514 for the same period a year ago. Despite the decline from a year ago, there is an improvement more real than apparent. Virtually all of the September quarter's earnings were believed to have been developed during the month of September. Summer traffic this year was most disappointing. Public acceptance of the DC-6 was particularly slow following the June accident of this type aircraft flown by another airline. This circumstance served as a damper on airline earnings during the transcontinental's most profitable period.

American, largely aided by the "family plan" built up traffic in October to the extent that net earnings for the month are estimated to have been more than $700,000. Favored by the same active promotion and good weather, the final results for the normally large deficit month of November may make pleasant reading. In fact, it is in the realm of possibility that American may yet be able to show a slight profit for the fourth quarter, traditionally the worst period of the year for most transcontinentals. During 1947, the last three months accumulated a net operating loss of $2,939,915 for American.

►**Sound Condition**—American continues in a sound financial condition. As of Sept. 30, 1948, the company showed net current assets of $9,290,165 and did not disturb its stand-by credit of $7,500,000.

Capital Airlines is making a determined recovery despite difficult operating circumstances present in its route restrictions and existing equipment. For the September quarter, the company showed a net operating profit of $168,349 compared with $131,874 for the same period in 1947.

It is believed that operating loss for October, 1948, was around $93,000, which compares with loss of $148,000 for the same month the previous year. Furthermore, mail pay for October of last year was believed to have been about $32,000 higher than for the same month this year.

►**Balance Improves**—One of the most remarkable accomplishments in the Capital picture, is the consistent improvement in the balance sheet. Reports indicate that the company's cash position at the end of October, 1948, was the highest since October, 1946. This was done without benefit of additional borrowings. In the last two years, however, no interest was paid on the debentures, this requirement being about $350,000 annually.

Continental Air Lines reported net income of $136,889 for the nine months ended Sept. 30, 1948. This is represented to be a 77 percent improvement over the same period a year ago. It is evident that the high relative contribution of mail pay is largely responsible for the better figures. For example, for the current nine months, mail income constituted about 30 percent of the company's total revenues. As a matter of contrast American received less than 5 percent of its total revenues from mail compensation. For the first nine months of 1948, Continental's total mail revenues aggregated $1,008,000 as compared with $464,558 for the like period of 1947.

►**UAL Income**—United Airlines reported net income of $734,116 for the September, 1948, quarter as contrasted to $1,428,587 for the same period the previous year. United is believed to have been badly hit by the general public hesitancy to use the DC-6 following the mid-year crash. United and other DC-6 operators have slowly but very determinedly succeeded in overcoming this apathy. Reaching its seasonal peak earlier than the other transcontinentals, United, nevertheless, is known to have shown a very slight loss for October, normally a substantial loss month.

Other carriers, for the most part, are reflecting various degrees of relative improvement. Such gains are a reflection of better cost control and more efficient scheduling.

—Selig Altschul

Slower Landings Sought for Safety

Lightplane research projects aim at widening speed range without materially decreasing top speed.

Next major improvement in the small personal and business airplane promises to be a combination of new design features which will enable them to fly more slowly without detracting from their high speed.

Extension of the total speed range of the small airplane on the low end of the range without sacrificing any serious amount of high speed, would probably add more safety and utility to the small airplane, than any other single design change.

Two current independent research projects on development of slow-flying aircraft are employing two of the top-flight lightplane engineering experts in the country. Prof. Fred E. Weick, head of the new Personal Plane Research Center at Texas A & M College, and Prof. Otto Koppen, aeronautics professor at Massachusetts Institute of Technology.

►**NACA Contract**—Weick has recently signed an NACA development contract which authorizes his research center to perform an analysis of existing technical information on wing flaps, as a basis for a new development project on a suitable high lift flap for light plane use.

Meanwhile Koppen, working through the Aeronautical Research Foundation at Boston, has been developing a slow-flying experimental plane, as a second step in the goal of the foundation to provide a personal plane which can use close-in small airports without hazard or offense to nearby residents.

Speed range of most existing personal and business planes varies from about 2 to 1 in the best cases slightly over 3. A plane with a top speed of 150 mph. and a landing speed of 50 mph. would have a range of 3.

Prof. Weick will soon have available for his development project the new Texas A & M wind tunnel with 8 ft. × 10 ft. throat and 150 mph. speed which is now operating as an open throat tunnel, although incomplete. The return section which makes it possible to recirculate the same air, will soon be completed, making it a closed throat tunnel.

►**Recognition**—In awarding the contract to Texas A & M, the NACA has recognized one of its foremost technical staff alumni. Weick, and at the same time has maintained separation between two quite different fields of research for high speed and low speed aircraft.

The governmental research agency has been under pressure repeatedly since the end of World War II to devote more of its own facilities to personal aircraft research in order to foster production of more useful planes for the business firm and private user. Except for making available reports on basic data which is in some instances applicable to the light plane, NACA has not complied. Basic reasoning of NACA officials is that the personal plane research problems, pressing as they may be to potential users and civilian industry, are still less urgent than the sonic range research problems involving national defense which are given first priority.

►**Second Contract**—The Weick contract is the second to be given by NACA for light plane research. Aeronautical Research Foundation was awarded a light plane noise reduction research contract in the summer of 1947. Work on this project is virtually completed, although tabulations are still being compiled. Prof. Koppen did the major engineering work on this project.

His slow flying plane development for Aeronautical Research Foundation was started independently of the NACA noise reduction project. Until recently, at least, it was not government sponsored.

Both Koppen and Weick are fully aware that there are many engineering solutions which have already been used for making a plane fly slowly, and that it has been technically possible to make such an airplane for at least the last 15 years. Despite this fact, the general manufacturing trend in aviation has been to push design consistently toward the higher edge of the speed range and to ignore slow flying possibilities. Only real manufacturers' interest in slowing planes down in flight has been shown in designs of military liaison planes and planes used on Navy carriers.

Most solutions for these military airplanes have been relatively complicated and expensive, presumably the primary reason why the light plane industry has shown little interest in them.

Weick and Koppen, however, are familiar with the economy problems of light plane construction. It is quite likely that either or both may come up with simplified designs for flaps, slots, spoilers or other means to slow down the planes which will be well within the reach of some members of the industry. Once one or two manufacturers add the advantage of slow flying to their personal planes, competition may do the rest.

Few of today's personal planes have flying speeds much below 50 mph. if they will cruise much above 100 mph. Some military liaison planes have attained flying speeds as low as 25 mph. Any appreciable gain on the slow end of the speed range resulting from the Weick and Koppen projects and other research stimulated by their work will mean a definite increase in plane utility and safety, even if the slowest slow speeds are not economically attainable.

Third Seat for Junior In Ercoupe Club-Air

The Ercoupe Club-Air, providing a third seat for junior passengers weighing up to 75 lb., is the principal innovation offered in the 1949 Ercoupe plane line, Sanders Aviation Inc., Riverdale, Md., world distributor of the airplane, has announced.

Exterior of the 85 hp. Club-Air has a weather-resistant paint covering with a standard color of blue with cream trim. Other colors may be selected including vermillion, green and yellow, by an additional payment of $25. A new bubble windshield is provided for improved visibility and service, and soundproofing has been improved. Cabin interior and panel have been restyled, and cabin air conditioning and foam rubber seats are provided. Craft is priced at $4090.

Performance of the plane is essentially the same as that of the 1948 Ercoupe which also has an 85 hp. engine. Manufacturer quotes range of 430 miles at 110 mph. cruising speed.

Second plane in the Ercoupe 1949 line is a standard Ercoupe using 75 hp. Continental engine and priced at $3590. Standard has cruising range of 450 miles at 105 mph. cruising speed, and has less deluxe equipment.

Both planes retain the standard Ercoupe spinproof design and two control arrangement. They are expected to be available shortly after the first of the year.

Education Award

The Brewer Award for outstanding contributions to aviation education during 1948 has been given to Philip S. Hopkins, vice president of Link Aviation Inc., and president of the board of education of Binghamton, N. Y.

Mail Pay Rises Cut Airline Deficits

Year-end increases will help make fourth quarter losses less than 1947 figures; latest to benefit is Northwest.

By Charles Adams

The last possibility that 1948 airline deficits will equal or exceed 1947's record losses has been virtually eliminated.

Year-end mail pay increases have blotted up substantial quantities of red ink spilled earlier. And fourth quarter losses—while sizeable—will not approach the huge deficits suffered in the same period last year following the DC-6 groundings.

▶**Aid Offered Northwest**—Latest carrier slated to benefit from a Civil Aeronautics Board mail pay boost is Northwest Airlines, which has been in a critical financial position. The Board has offered to remove NWA from the 'Big Five' mail rate case and has issued a show cause order which would boost the company's domestic revenues by about $764,000 this year.

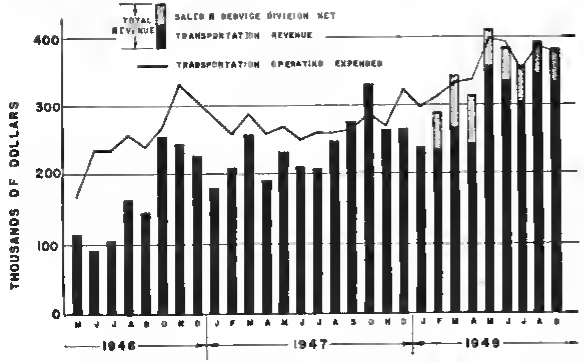
Prior to the NWA order, CAB

- Offered to increase TWA's international mail pay by $2,512,000 for the first 11 months of 1948. The hike from 60 cents a plane mile to 85 cents would nearly wipe out the carrier's net loss of $2,918,422 on overseas services during the first nine months of this year.
- Awarded American Overseas Airlines $174,517 additional mail pay in establishing the carrier's final compensation for 1945. The permanent rate gave AOA $265,357 operating profit for the year—equal to 7 percent on the company's recognized investment.
- Confirmed proposed mail pay increases for Braniff Airways, Delta Air Lines, Northeast Airlines and National Airlines (AVIATION WEEK, Sept. 27, Nov. 1 and Dec. 6).

Braniff will receive $1,563,154 more mail revenue for the period Nov. 27, 1946, to Mar. 31, 1948. New rates which started Apr. 1 of this year will yield the company about $1,545,000 annually in excess of the sum provided in the previous formula.

▶**Other Boosts Listed**—Delta will receive an additional $907,428 for the period between Sept. 9, 1947 and Mar. 31, 1948. For the period which started last Apr. 1, Delta has had its mail pay increased by about $1,911,000 annually.

Northeast is to get $910,000 additional mail pay for the period May 1, 1947, to June 30, 1948. A new rate starting July 1, 1948 should yield almost $800,000 annually more than the previous formula.



SLICK AIRWAYS HITS THE BLACK

Aided by revenues from its Sales and Service division, which is handling C-46 modifications for the Air Force and other customers (Aviation Week, Dec. 20), Slick Airways earned $11,000 in the third quarter and hopes to show an overall profit for 1948. Chart shows that with the exception of two months in 1947 Slick Airways has been unable to make a profit on its freight operations alone.

National is to get $233,000 additional mail pay for the period July 14, 1947, to June 30, 1948. For the last six months of 1948, NAL will get 17 cents a plane mile systemwide mail pay instead of 10.5 cents, and starting Jan. 1, 1949, it will get 17 cents instead of 7.5 cents.

▶**Courts Review Decisions**—While Northwest and other carriers have been given partial relief from recent deficits, chances of recouping some losses prior to 1948 are fading. Capital Airlines (PCA) early this month lost another bid for $5,300,000 in retroactive mail pay from June 1, 1942, until Jan. 13, 1947.

The U. S. Circuit Court of Appeals for the District of Columbia ruled that mail subsidy payments set by CAB were not designed to guarantee the certificated airlines a profit. Upholding CAB's position on retroactive mail pay, Associate Justice James M. Proctor said the Civil Aeronautics Act "is not intended to underwrite a carrier's earnings any more than statutes imposing regulation of public utilities are intended to insure them a net revenue."

Capital had asked CAB for the retroactive payment to assure a 10 percent return on its investment and had asserted the government was obligated to assume this responsibility. The adverse court decision does not affect an application for increased mail pay filed by Capital on Jan. 14, 1947.

▶**Final Ruling Expected**—Meanwhile, the Supreme Court has agreed to rule on whether CAB has power to change a permanent mail rate covering a period prior to the filing of an application for increased pay. A CAB decision last December involving TWA held that the Board has no power to fix a new mail rate for operations during a period in which a final rate previously fixed by the Board was in effect and unchallenged.

"It is a firmly-established law," CAB had declared, "that a public utility rate deals only with the future and is not concerned with reimbursement of past losses or recapture of past profits which have proved excessive." At issue in the TWA case is the carrier's claim for higher mail rates which would have yielded an additional $11,157,000 for the period Jan. 1, 1946 through Mar. 14, 1947.

▶**Profit in October**—Reporting modest earnings in October, the 16 domestic trunklines completed the first 10 months of 1948 with operating losses totaling about $7,780,000 against $9,880,000 for the same 1947 period. By contrast, the carriers' net deficit was close to $14,000,000 through Oct. 31, more than $3,000,000 higher than on the same date a year before.

But during November and December, 1947 the domestic trunklines lost more than $10,000,000—half of their overall deficit for the year. A combination of higher mail pay and the industry's superlative safety record will help keep losses at a moderate level during the last two months of 1948.

Only four of the 16 domestic trunklines finished 1947 with operating profits—Continental, Eastern, Inland and Mid-Continent. This year at least seven of the 16 seem certain to show operating profits.

▶**First Ten Months' Results**—Through Oct. 31, Braniff had a domestic operating profit of $580,462, Colonial $124,415, Chicago & Southern $542,200, Continental $265,380, Delta $1,042,991, Eastern $3,660,000 (estimated), Inland $123,237 and Mid-Continent $10,538. Reporting operating deficits for the 10 months were American $2,348,601, Capital $1,004,108, National $1,909,258, Northeast $793,842, Northwest $3,343,449, TWA $1,476,337, United $2,113,756 and Western $1,144,433.

United's domestic loss was partially offset by a $290,728 ten month operating profit on its Hawaiian link. Northwest had a tidy $1,057,860 operating profit on its run to Alaska and the Orient.

▶**Reversal on Northwest**—CAB's move to increase Northwest's domestic mail pay reverses action taken last spring. At that time, the Board tentatively placed NWA in the same unsubsidized "service" rate class with American, Eastern, United and TWA.

Under the Big Five decision, Northwest has been receiving about 9 cents a plane mile (70 to 75 cents a ton mile), a rate which would have given the carrier around $1,523,000 in mail pay during 1948. The proposed new rate of 14 cents a plane mile would give NWA $2,287,000 in mail pay this year, but the carrier still will be far in the red for 1948—in the red at least until a final rate is set.

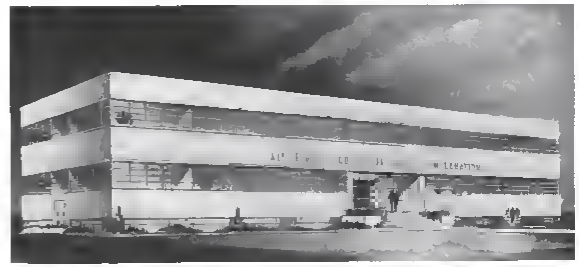
CAB's order last spring placing Northwest in the same group with the Big Four was based on the fact that in 1945 NWA became a transcontinental carrier, had the long haul operational characteristics of the Big Four and was the fifth largest domestic carrier. The Board believed Northwest had reached the stage in its development which enabled it to operate under economical and efficient management without the aid of mail pay subsidy.

▶**Error Alleged**—NWA protested last summer (AVIATION WEEK, Aug. 16) that CAB had made a grave error by lumping it with American, Eastern, TWA and United for mail pay purposes. It asserted that from the standpoint of size and traffic potential the fourth-ranking carrier was more than twice as large as Northwest.

New CAB studies have shown that Northwest recently became further removed from the Big Four in terms of total traffic carried. This condition developed despite inauguration last March of service on NWA's new route between the cities of Detroit and Washington, D. C.

Although the Board's latest decision found Northwest unable to operate profitably at a rate reasonable for the Big Four, it declared NWA "should reach a stage of development in the reasonably near future which will permit its being joined with the Big Four group for mail pay purposes."

CAB said Northwest's recent unit costs "appear to be in excess of those which we found reasonable for Braniff and Delta in recent mail pay decisions." "These higher costs of NWA may have resulted from excess depreciation and possible overscheduling as well as other expenses not properly recognizable as reasonable costs for rate-making purposes under economical and efficient management."



PROPOSED PILOT HEADQUARTERS

The Air Line Pilots Assn. has announced plans to build a $350,000 headquarters building in Chicago next year. The union's new home, shown in the above architect's sketch, will provide air-conditioned meeting rooms and office space for ALPA's staff of 65. It will be located at Chicago Municipal Airport at the northwest corner of 55th St. and Cicero Ave. Outside dimensions of the structure are 180 by 50 ft. It will provide 27,300 sq. ft. of floor space on its two floors and basement.

Underground Fuel System Must Wait

Airport refueling trucks, a major traffic headache, are still going to be around for some time to come—despite desires by airlines and airport operators for underground refueling facilities.

Future airports undoubtedly will be built with underground refueling systems. But while such systems would seem to be the solution for present difficulties, they are unsuitable for existing airline operations.

These conclusions were voiced at the recent refueling conference of 14 airline representatives held in Chicago at the invitation of Shell Oil Co.

While refueling trucks present serious traffic problems and cost too much—a 2700 gal. model is $17,000—they remain the only practical answer for airplane fuel loading.

▶**Improve Techniques**—Facing the fact that trucks are here to stay for awhile, the conference spent most of its time considering ways of improving present refueling techniques.

It served mainly as a clearing house for information based on past experience and on proposals for new developments. Shell also presented results of research on equipment and methods for airline refueling.

It was generally agreed that refueling trucks should have minimum length, maximum maneuverability and a high output fueling system to speed up operations and reduce congestion on the apron.

▶**Recommendation**—A recommendation that developed out of the conference was that both fuel pumps on refueling trucks should be used to quicken plane fuel loading. Up to now, one pump has been reserved as a standby in case of failure of the other. According to a Shell official, this practice is unnecessary because modern pumping equipment seldom breaks down.

Development of underwing filling points on airplanes is an important factor in speeding up refueling. Most of the newer type transports incorporate this feature which is more convenient than the conventional method and safer because it eliminates the need for climbing on the upper surface of the wing.

Although no specific measures were taken, members of the conference admitted that refueling trucks should be standardized. As it stands now, each airline has different specifications and requires special equipment on its trucks—one reason for high cost.

▶**Trucks Are Leased**—Trucks usually are

leased to the airlines by the oil companies who have them built according to airline requirements

A Shell official stated that oil companies would prefer it if airlines bought their own trucks—but they can't afford it. He pointed out that the oil companies don't lease the trucks primarily to make money, and if they were standardized it would be reflected in lower leases.

Despite their problems, trucks are more practical at present than refueling pits. Airline operations—scheduling and plane locations—will have to stabilize to a degree that approaches railroad operations, before permanent service pits can be used to advantage.

The fact that New York International Airport does not incorporate any such installation bears this out. Manumeter equipped refueling trucks are able to reach planes no matter where they are located.

Airlines participating in the Shell conference: American, Chicago and Southern, Eastern, Northwest, United, TWA and Pan American. I. W. Timmerman of the Air Transport Assn. also attended.

Equipment Standardization Aids MCA Maintenance

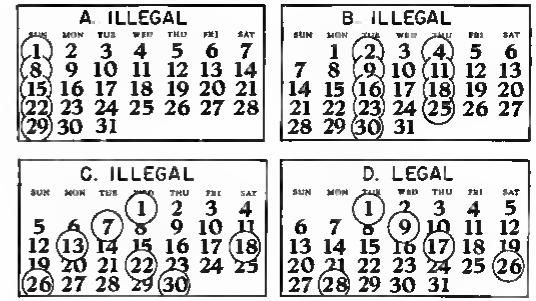
Mid-Continent Airlines is pointing to its thorough program of equipment standardization as one of the most important factors in the month by month improvement in maintenance efficiency.

During October, MCA's 18 DC-3s—which probably are as near standard as any similar group of aircraft in operation today—flew an average of 41,341 miles between mechanical delays. This was a new record for the carrier. MCA had a system operating efficiency of 99.7 percent in the month, when 725,605 of 727,818 scheduled miles were flown.

▶ **Continuous Process**—The standardization program is a continuous process at Mid-Continent's maintenance base at Minneapolis/St. Paul. With engines interchangeable, the necessity of matching parts has been eliminated. Before the standardization, different accessory arrangements were followed in building up every engine.

If engine changes are necessary away from the maintenance base, any spare can be pulled out of the "bank" and be on its way to the station where needed in a few hours.

▶ **Year's Work Involved**—The engine standardization required a year and involved complete rerouting and redesigning of tubing connections on the fire wall, incorporation of sealing couplings and flexible lines and rerouting of the engine plumbing. Another major change was the fabrication of standard instrument panels. This was accomplished after the changes were approved by a vote of all MCA captains and first officers.



Guide For Nonsked Operators

Nonscheduled operators have received a new guide to help them determine for themselves whether their services are sufficiently irregular to be legal.

The Civil Aeronautics Board recently issued a number of examples of services which do and do not comply with Section 292.1 of its Economic Regulations. A proposed revision of the nonscheduled exemption (AVIATION WEEK, Dec. 20) neither enlarges nor contracts the scope of operations permitted by the regulation but makes a crackdown on violators much easier.

▶ **Legality Defined**—CAB emphasized that a nonscheduled operator is not immune from enforcement action if its actual flights are irregular but all the circumstances surrounding its business show that the carrier is holding out regular service to the public.

The accompanying four calendar tables drawn up by CAB illustrate legal and illegal operations by an irregular carrier flying between the same two points in one direction, on the days of the month circled.

• **Example A**—Since these flights are conducted on the same day of each week the service is not irregular within the meaning of the regulation. Even if over a period of weeks an occasional Sunday flight is omitted, or operated on some other day of the week, such minor variations in the generally regular pattern would not cause the service to become irregular.

• **Example B**—These flights are conducted regularly, twice a week, without frequent and extended breaks in service and are not irregular within the meaning of the regulation. The operation would be illegal even if over a period of weeks an occasional flight is omitted or is conducted on some other days of the week.

• **Example C**—These flights are conducted at regularly recurring periods, or substantially regular periods (every four, five or six days) and, therefore, do not achieve infrequency and irregularity of service. Such an operation is not permitted.

• **Example D**—These flights are irregular and within the scope of the nonscheduled exemption. They are conducted on a different day of each week and are operated only after frequent and definite breaks in service. Although two flights (on the 26th and 28th) are operated within a period of less than one week the frequency is compensated for by the breaks of at least a week between other flights.

Air Transport Course Offered in Washington

A concentrated course in current air transportation problems is offered executives and junior officials in third annual Air Transportation Institute.

Conducted by American University, it will be held in Washington, D. C., from Jan. 18 to Feb. 11.

Full-day schedules will include courses in basic principles of transportation, development of air transportation, airports and airways, airline transportation and traffic, international air transportation, and many other subjects.

Students actively participate in the discussions. Field trips to transportation facilities, visits to the government and other agencies and films will supplement classroom work.

D. W. Rentzel, Civil Aeronautics Administrator, will head the group of speakers.

Airline Unions Press For Higher Wages

Airline ground employe unions plan to step up their organizing drives in 1949. At the same time they will press for higher wages and welfare benefits as part of the fourth round pay increases which are now being sought by unions generally.

The new year may also bring U. S. commercial aviation its first master union contract—a four company agreement with the International Assn. of Machinists (Independent) involving these air carriers—Eastern Air Lines, United Air Lines, TWA and Northwest Airlines.

▶ **Left-Wingers Removed**—The Transport Workers Union (CIO) convention in Chicago cleaned the union's airline division of left-wing leaders to get set for a major campaign to boost its claimed 12,000 airline membership. This was part of the general left-wing housecleaning accomplished by President Michael J. Quill and stimulated by new national CIO policy. The convention adopted a new constitution which bars Communists or sympathizers from holding a union job.

Quill's program got direct support from two other CIO unions. Walter P. Reuther, president of the United Automobile Workers, promised to return the airline members it had wooed from TWU in Miami. And the airline communications division of the American Radio Assn. made arrangements for an intra-CIO shift to TWU. It claims a total of 1500 members among the employes of the eight major air carriers.

The new anti-Communist TWU executive board fired six organizers assigned to airlines, including Maurice H. Forge of New York, director of the airline division. But the board's refusal to let the airline locals pick their own organizers or even retain Forge has stirred up some dissension against the new TWU leadership.

▶ **Wage Program Adopted**—The convention adopted a wage program calling for a $2 hourly minimum, 40-hour week, employer financed welfare plans, pension system guaranteeing at least 50 percent of the highest wage after 25 years on the job, more liberal vacations and more paid holidays.

The master contract between the International Assn. of Machinists and the four major airlines is proposed in a memorandum agreement on procedure for negotiating such a pact. It has been submitted to IAM's 8000 members employed by the four companies for approval in a referendum.

The machinists' union hopes to negotiate uniform provisions covering wage rates, hours of service, shift differentials, overtime, holiday and vacation pay, longevity pay and other money matters. International Assn. of Machinists would like to interest some of the 24 other airlines with which it has contracts in the master pact.

HAWAII BOUND

Making his first trip to Hawaii in about 25 years, Northwest Airlines President Croil Hunter, center, accompanied by his wife, boarded NWA's recent inaugural flight from Seattle to Honolulu wearing a Pacific Northwest lei of crab apples. At left is Frank C. Judd, Northwest's western region vice president.

Airlines Help Army Play "Here Comes the Bride"

U. S. commercial airlines, both certificated and uncertificated, were handed close to a million dollars worth of emergency overseas business during a four-week period this month as the Army tried to beat the Dec. 28 deadline of the Alien War Brides Act.

Realizing that existing transportation facilities could not bring between 3300 and 3500 war brides of service men back to the U. S. within the time allotted, the Army negotiated contracts with five airlines for 78 trans-Atlantic flights. Sixty-seven of these trips were to originate at Munich, Germany, eight were to originate at Frankfurt and three were to originate at Trieste.

Seaboard & Western Airlines, a contract operator, was slated to make 24 flights, Transocean Air Lines another uncertificated company, 21 flights, TWA, 15 flights, Alaska Airlines, ten flights, and American Overseas Airlines, eight flights. AOA and Pan American Airways, which serve Germany on their regular routes, have transported thousands of military dependents and civilian personnel from Frankfurt to the U. S. since September. But they had insufficient capacity to handle the unexpectedly large war bride traffic which occurred during December.

CAB Policy Tested By NAL Action

Testing to the limit CAB's avowed enthusiasm for equipment interchanges, National Airlines President G. T. Baker has offered to throw open his company's routes to the planes of nine other certificated carriers.

The proposal was presented to CAB informally only a month before the Board planned to open hearings on possible dismemberment of National. Baker said his interchange offer would bring a revolutionary advance in airline service to the public without creating excessive competition through certification of new routes.

▶**Reciprocal Rights for NAL**—Planes of Panagra, Delta, Northeast, Braniff, Eastern, Colonial, Mid-Continent, Chicago & Southern and Pan American would be permitted to fly beyond NAL junction points to other cities on National's routes under Baker's plan. National would have reciprocal rights thus eliminating on a wholesale basis the need for shifting passengers, mail and cargo to a different company's planes at the junctions.

NAL already has an equipment interchange pact with Capital Airlines before CAB for approval.

Two interchange arrangements approved by CAB are already in effect—between Pan American and Panagra from South America to Miami, and between Delta and TWA at Cincinnati. Need for interchanges in the St. Louis-Memphis area and on the southern transcontinental run is also being investigated.

▶**Pilots Cool to Interchange**—Clouding the interchange picture is the Air Line Pilots Assn.'s coolness toward such pacts.

Meanwhile, CAB has clarified its intentions further in its investigation to determine whether National's routes should be parceled out among other carriers. The Board has again emphasized that the present probe is exploratory and a new proceeding will be initiated to force NAL's dismemberment if the move is found to be in the public interest.

▶**Compulsion Opposed**—Under these circumstances CAB believes its power to compel transfer of NAL's routes is not an issue in the current case, on which hearings will be held starting Jan. 24. All intervening carriers contend that the Board lacks power to force NAL's dismemberment against the company's will.

CAB also has made plain that Pan American, Delta and Eastern—the carriers named in the original order—are not the only ones eligible to acquire National's routes and property.

Flight Engineers In International Union

With most airlines hiring flight engineers in accordance with the Civil Aeronautics Board ruling, a new union is bidding for a place of authority at airline labor's council table.

It is the Flight Engineers International Assn., an outgrowth of four unions representing employees in separate companies. Now they have merged and have been chartered as an industry wide union by the American Federation of Labor. Newly elected President Lawrence H. Hinton of Pan American Airways, expects the association to have a membership of better than 3000 before the end of 1949. Present membership is about 1000, 97 percent of flight engineers employed by airlines now using the third crew man.

▶**Policy Pattern**—The Association is too new to have announced definite aims. But some hints of policy are beginning to emerge. First off, the union probably will formulate some method of assuring that the experience and skill of flight engineers be kept at a high level despite that great influx of new men.

Also there is a growing feeling that permissible flight time of the engineers should be cut. Some now are on duty as much as 12 hours a day. Initial aim probably will be to shoe this to eight hours. Result would be that airlines operating long nonstop flights would have to carry two flight engineers.

It likely will be some time before the IFEIA takes any tangible step in either direction. Although flight engineers have been used on airline planes for more than ten years, their union efforts are fairly recent.

▶**Background**—Pan American Airways hired the first flight engineers for their Clippers, but called the men "copilot flight mechanics." Designation of flight engineer began in 1935 with duties on Pan Am's China Clipper. Second airline to install flight engineers was TWA using them on the Stratoliners. American Export Airlines (now American Overseas) put FEs on their Sikorsky flying boats when it began trans Atlantic operations. Eastern took on the additional crew member last year when it began Constellation service.

First flight engineer unions were organized about the same time in 1944 at Pan American and AOA. The AOA union later was chartered by A. F. of L. and a TWA flight engineers union also received an A. F. of L. charter. When FAL flight engineers organized last year they likewise were chartered by A. F. of L.

Now the flight engineers, banded together into one A. F. of L. union, have a number of other airlines to tap for membership—under CAB's ruling, every carrier operating aircraft of more than 80,000 lb. gross weight. That means lines using DC-6s, Constellations, and the forthcoming Stratocruisers.

RAF Rebuilds Field For Airlift Planes

(McGraw-Hill World News)

LONDON—USAF Skymasters on the Berlin airlift will be able now to use the new airfield at Celle, near Hanover, in the British zone.

Celle, a wartime Luftwaffe transport aerodrome formerly had temporary runways unsuitable for heavy aircraft. On Oct. 1 orders were given to the RAF to rebuild it to the standards required by the heaviest aircraft on the airlift. Target date for completion was Dec. 15.

The new 2000-yd. runway, taxi tracks and hard standings will cover a total area of some 314,000 square yards of newly laid tarmacadam—equal to a road 25 miles long. Twenty-five steam rollers, 10 bulldozers and 150 vehicles are in use on the site.

To facilitate night operations, 350 floodlights are being installed at Celle.

ATA To Ask Tighter U. S. Hold on Air Laws

The Air Transport Assn. will make a new bid next year for legislation tightening federal control over air regulation.

A bill drafted by ATA for recommendation to Congress would redefine terms used in the 1938 CAA act in order to:

(1) Give the federal government exclusive jurisdiction on economic matters over interstate air carriers.

(2) Confirm, in more explicit language, the federal government's exclusive safety jurisdiction over all users of air space, and authorize the states to enforce federal safety regulations.

ATA has been trying for six years to concentrate air transport jurisdiction in Washington, and avert the confusion that results from varying and conflicting state regulations. Its first program, proposed by the late Rep. Jack Nichols in 1942, went all-out for federal jurisdiction by affirming the federal government's ownership of air space and its exclusive jurisdiction over all users of the air space.

This program was blocked by the vigorous opposition of state governments. ATA's present proposal compromises on the Nichols program to meet state objections.

TWA Ethiopian Aid

TWA's agreement with the Ethiopian government under which the American company has helped organize and operate Ethiopian Air Lines during the postwar period has been approved by CAB.

SHORTLINES

▶ **American Overseas**—Norman P Blake has become European sales manager, replacing Jacques de Sibour. Ben Wright has been named public relations director of American Airlines as well as AOA.

▶ **Irish Air Lines (Aer Lingus)**—Has completed the sale of five Vickers Vikings to Misr Airlines, Egypt, delivering the planes at Cairo this month

▶ **Northwest**—Company's proposed 4-cents-a-mile skycoach service between Minneapolis and Washington, D C, is to be conducted with Martin 2-0-2s and will start at both terminals about midnight. Present through fare (6 cents a mile) is $52.55, plus tax, while the coach fare is estimated at about $35 plus tax. Stops are slated at Milwaukee, Detroit, Cleveland and Pittsburgh. No meals will be served

▶ **Pacific Northern**—Special cargo services operated between Seattle and Alaska during the three month maritime tie up were discontinued Dec 15. Company estimated it handled 600,000 lb of essential cargo while serving Seattle under special exemption from CAB

▶ **Philippine Air Lines**—Flew 65,264 lb of cargo from the U S to the Orient during November—an all time high—largely as a result of the recently-ended maritime strike

▶ **Pan American**—Has started a second all-cargo DC-4 flight between New York, London and Brussels. Joseph J Dysart, formerly Latin American division engineer and more recently engineer for the airline's Atlantic division in New York, has returned to Miami as maintenance manager

▶ **Robinson**—CAB has approved transfer of Robinson Aviation's feeder certificate to Robinson Airlines Corp. The Board said control of the carrier by Robinson Aviation is consistent with the public interest

▶ **Trans-Canada**—R C MacInnes will become the carrier's director of public relations Jan. 1

▶ **Trans-Caribbean Air Cargo Lines**—Flew 5,104,495 revenue passenger miles and 69,250 revenue ton miles of cargo during the third quarter under its letter of registration. In addition, it flew 6,747,000 revenue passenger miles and 249,000 ton miles in foreign transportation. Employes numbered 146 on Sept. 30 against 141 in June. Net profit in first half of 1948 was $106,109

▶ **Transocean**—Showed net income of $238,997 for three months ended Aug 31, including $110,381 in net on Pacific and $128,616 net on Atlantic division operations. Total revenue in period was $1,904,263. Earned surplus on Aug 31 was $855,740. Company on Aug 31 had 11 DC-4s (five owned, six rented) and 836 employes

▶ **TWA**—Will cooperate with the University of Kansas in providing airline hostess training for senior women starting with the spring semester

▶ **United**—Expects to carry 20 percent more air mail this Christmas than last, with parcel post making up 15 percent of the total volume.

KLM Flies Convair-Liners

First Convair-Liners to go into regular service in Europe are being operated by KLM Royal Dutch Airlines between Amsterdam and Stockholm. KLM had five of the pressurized 40-passenger craft on hand by early December, and seven others are to be delivered shortly

CAB SCHEDULE

Dec 29—Oral argument in Capital-National equipment interchange case (Docket 3291.)

Jan. 4—Hearing in TWA route consolidation case (Docket 2581 et al.)

Jan 19—Oral argument in Continental Air Lines route consolidation case. (Docket 376 et al.)

Jan 10—Hearing in Florida Airways certificate renewal case (Docket 3511.)

Jan 10—Hearing on TWA's complaint against Seaboard & Western Airlines Docket 3348.)

Jan 10—Hearing on TWA's complaint against Pan American Airways Saudi Arabian service (Docket 3264.)

Jan 10—Hearing in New England states service case. Changed from Jan 17 (Docket 2188 et al.)

Jan. 12—Oral argument on Pan American Airways' Miami San Juan St. Thomas fares (Docket 2274.)

Jan 10—Hearing on Board's investigation of through service and interchange requirements at St. Louis and Memphis (Docket 3426.)

Jan 24—Hearing in Milwaukee-Chicago-New York restriction case (Docket 3408 et al.)

Jan 24—Hearing on Board's investigation of National Airlines route transfer (Docket 3500.)

Jan 20—Hearing on Western Air Lines-Arizona Airways San Diego-Yuma route transfer (Docket 3448.)

Jan 31—Hearing on additional service to Puerto Rico. (Docket 2123 et al.)

Feb 2—Hearing on Florida trunkline service. (Docket 2215 et al.)

Feb 2—Hearing on Board's enforcement proceeding against Transocean Air Lines. Postponed from Jan. 23. (Docket 3244.)

Feb 14—Hearing on Board's enforcement proceeding against Nats Air Transportation Service. Postponed from Jan 31 (Docket 3466.)

Feb 16—Hearing in reopened Mississippi Valley and southeastern states cases. (Dockets 348 and 501 et al.)

SEARCHLIGHT SECTION

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STRICTLY PERSONAL

RANDOLPH'S ELECTRIFYING WALLOP—Everybody in aviation knows **Jennings Randolph** packs a wallop as a public speaker, but he outdid himself the other day.

The ex Congressman has been stumping the country as assistant to Capital Airlines President **Slim Carmichael**. In fact, Jennings has just turned out a snappy instruction booklet for airline personnel on public speaking.

Jack Purcell, manager of Capital's news bureau, tells the story:

"While speaking before 300 persons at the Akron Shrine Club, Jennings happened to reach for the microphone and the electric light switch on the podium at the same time. There was a short in the mike and the result was electrifying.

"Jennings was thrown to the stage floor, but he had presence of mind to request (in a loud voice, I might add) that someone pull the microphone cord out of the outlet.

"He was severely shaken but got up off the floor, dusted himself off, and delivered a 30-minute speech."

(Of all people, we'd never expect Jennings to get mike bite.)

* * *

FIRST FLIGHT SOUVENIRS—Purely in the spirit of fun. American's **Hy Sheridan** passes along the story below but says Stewardess Meek tells him it really happened. We don't know.

"American's first scheduled flight to San Francisco was swinging through the windy corridors of the night, as the poets say. Sadie the Stewardess picked up a pile of enscrolled papers. Stopping at the first seat she said:

"'Sir, this is our first flight to San Francisco, and here is your souvenir.' She handed him one of the certificates.

"'Thanks,' the man said, 'this is my second inaugural flight. I was on the one United had to Honolulu. The girls gave us leis after that flight.'

"'Well, you got to admit,' Sadie sighed, 'United has the best public relations department.'"

* * *

ALISON THROUGH THE OVERCAST—Bob Hotz of our Washington office hears that **Johnny Alison**, Assistant Secretary of Commerce for Air, was flying a convoy of British dignitaries back to Montreal in a DC-3 from Indianapolis where they had inspected all weather airways equipment.

Montreal had about 150 ft. ceiling. Johnny made an ILS approach, missed once and started to bore in again. Then his fellows began kibitzing. First his copilot wailed that they were off to one side. John denied it. Then Sir **Robert-Watson**, British father of radar and a great GCA promoter, began a loud campaign to stop all the fooling and call for GCA. But Johnny stuck it all out as he came down on ILS and the story is that he "split" the middle of the runway.

* * *

TODAY'S BALD FACT—**Richard Stockwell**, our Minneapolis correspondent, bulletins that the name of the new barber shop at Wold-Chamberlain Field is THE HAIRPORT.

* * *

INDUSTRY-GOVT. COOPERATION—Thanks to **Don Ryan Mockler** of the Personal Aircraft Council of AIA, we have this illuminating story illustrating the close liaison between the Council and CAA:

"While the AIA board of governors meetings were going on in California **Del Rentzel**, CAA chief, tore the collar of his last shirt while dressing for a session. **Joe Geuting**, PAC manager, and **Dwane Wallace**, Cessna prexy and retiring PAC chairman, together answered the call for help. Del got Joe's shirt (incidentally, Joe's last one) and Dwane's cuff links.

"Industry cooperation? Can we do more than give CAA our last shirt?" asks Don.

* * *

REPORTS ARE GREATLY EXAGGERATED—We have heard several funny rumors about AVIATION WEEK lately but it's the height of the current and lively ad selling season for aero magazines so we can understand why they are being manufactured. This editor's note is to let you readers know we are making plans for an even bigger and better AVIATION WEEK in 1949. AW led the field business-wise in 1948. In the 11 months of 1948, AW ran 1229 paid pages against 738 for the No. 2 publication, a monthly; 607 pages for the No. 3 paper, also a monthly, and 387 pages for No. 4, not a monthly. These are facts, not rumors.

R. P. W.

WHAT'S NEW

New Books

"Fluid Dynamics," a text designed for use in a second course in fluid mechanics for graduate students, by Victor L. Streeter, director of fundamental fluids research, Illinois Institute of Technology. Published by McGraw-Hill Book Co., 330 W. 42nd St., New York 18, N. Y. Price $5.

"Private Pilot Training," a manual compiled and edited under the supervision of Harold E. Baughman and Iris C. Critchell. Paper-covered, 374 pages, published by Aviation Sales Corp., 813 N. Highland Ave., Los Angeles 38, Calif. Price $4, which entitles purchaser to one free copy of latest CAR, Parts 20, 43 and 60, and free copies each of World Air Chart #350, Kanawha River, and one Sectional Chart, Des Moines.

"Combustion Engines," by Arthur P. Fraas, associate in motors, Aeronautical Institute of Technology of Brazil, and formerly associate professor of automotive engineering, Case Institute of Technology. Published by McGraw-Hill Book Co., 330 W. 42nd St., New York 18, N. Y. Price $5.50.

"Training Employees and Managers for Production and Teamwork," a book published by Ronald Press, and prepared by executives at Johnson & Johnson, manufacturers of hospital supplies. Book is devoted to improvement of teamwork and productivity throughout business and industry. Foreword is by Gen. R. W. Johnson, former chairman of the Smaller War Plants Corp. Information is available from Johnson & Johnson, New Brunswick, N. J.

Trade Literature

"Notes On Soldering," by W. R. Lewis, B. Sc., issued free of charge by Tin Research Institute, Fraser Road, Greenford, Middlesex, England. Hard-cover, 88 pages, illustrated.

"Twecolog," a 12-page illustrated catalog of cable connections. Available from Tweco Products Co., P. O. Box 666, Wichita 1, Kan.

"Bulletin L," a four-page folder on the Dillon Universal Tester, available upon request to W. C. Dillon & Co., Inc., 5410 West Harrison St., Chicago 44, Ill.

"Centri-Die Castings," a 12-page illustrated booklet explaining a new process of centrifugal casting. Available from Lebanon Steel Foundry, Lebanon, Pa.

"Control," a magazine on power regulation, containing a discussion of governors for all types of internal combustion engines. Available from The Pierce Governor Co., Anderson, Ind.

ADVERTISERS IN THIS ISSUE

AVIATION WEEK—DECEMBER 27, 1948

PROFESSIONAL SERVICES — SEE FIRST ISSUE OF MONTH

SEARCHLIGHT SECTION

(*Classified Advertising*)

LETTERS

Selling the Public

I have been following with interest your recent reports on local air expositions etc, notably the recent affair at Providence, Rhode Island

You will no doubt be interested to hear that this company assigned one DC 3 to sightseeing flight operations at New York International Airport during September October and early November on Sunday afternoons Our purpose other than the customary one was to acquaint the Brooklyn Jamaica and other suburban areas with our company's name purpose and methods

To make a long story brief we carried 1100 passengers during these operations this year but the important gain to us (and I believe to all other air carriers in the New York area) was the fact that about 65 per cent or 700 of those people had never been in an airplane before! We have had exceptionally pleasant customer reaction to both the trip we sold (at $3 "I" per person) and its method of operation We know that our company name is now known within a whole new group of persons who would not otherwise have heard of us or our certificated local service in their area

It is our justified conclusion that the assignment of one airliner to any traffic generating area for local flight duty is the best way we know of to broaden the sales base for airline patronage If you let the customer try out your product at home he's already 90 percent sold on its subsequent usefulness

FREDERICK H SMITH, President
Island Air Ferries Inc
MacArthur Airport,
Box 268 Bohemia, N Y

Not So Daring

It was with interest that we read the recent editorial entitled "Helicopter—Daring Enterprise," Nov 29 in AVIATION WEEK To those directly concerned with our young company the proposed program which we have undertaken for the coming years does not seem in our minds to be a "daring enterprise" as described in the editorial On the contrary it seems to us only a different approach to an age old problem

With the awarding of the Government certificate our company becomes the first organization formed solely for the manufacture of helicopters to receive a license from the Civil Aeronautics Administration This point is sometimes easily overlooked but is one which we feel will have a great bearing on our ability to produce an under $20 000 helicopter Other organizations with licensed helicopters have been in the fixed wing aircraft manufacturing business for many years before the advent of the helicopter During the war these organizations were subsidized to build aircraft on greatly increased scales Wartime aircraft production methods which emphasized speed regardless of cost, frequently resulted in over expansion of personnel facilities etc At the end of the war and when these companies started thinking of manufacturing a commercial helicopter, overhead and operating costs were major factors in setting sales prices for their rotating wing products These postwar prices reflect the continuation of excessive overhead and operating costs and for these and many other reasons their sales prices were set at what we consider very high figures

United Helicopters on the other hand, has never been faced with the above problems We took on the responsibility of raising a completely different "breed of cats" Our approach to the problem of engineering was different, our approach to the problem of manufacturing (92 percent of the "360" is manufactured by subcontractors) was different our sales system—which will be announced later—is not particularly along the usual lines For this reason we feel that it will be possible to produce the lowest priced helicopter in the field today We have some background on the cost for the "360" already Five production ships have thus far been manufactured and fixed price contracts let for it (very large in the helicopter world) large production run of "360s" These contracts were placed a number of months ago and accordingly are far enough along to substantiate the set price on 92 percent of this rotorcraft With contingencies added on to the other 8 percent to offset rising and unknown costs we feel more than "optimistic" about our cost goal

We have no guarantee that we can manufacture and sell these helicopters at this under $20 000 figure but with a background of being fortunate enough to have accomplished what we set out to achieve, and with years of production cost fighting behind us in other enterprises, we look forward to maintaining our position in this new and untried transportation field

STANLEY HILLER JR, President
United Helicopters Inc

Historical Footnote

The writer always reads with much interest your AVIATION WEEK and couldn't help chuckling at your article, "Propulsion Grab Bag"

To the best of my knowledge, Claude Ryan has never designed an airplane, furthermore at the time Lindbergh made arrangements for his Trans-Atlantic flight, Ryan had sold his interest to B F Mahoney

The engineer who deserves "full credit" for the design of the plane is Donald R Hall

The writer is well qualified to make the above statement as he was employed in a consulting capacity by Mahoney at the time this plane was being designed Furthermore, he was Assistant to the President, T C Ryan, before making his present connection with the Civil Aeronautics Administration

Knowing your desire for accuracy, am quite sure you will appreciate this letter

W A MANKEY
Aircraft Design Specialist
Washington D C

One Airline Pilot's Opinion

I would like to comment on Capt H F X Hession's piece on GCA and ILS problems in your Nov 8 issue I flew in the Air Force and am now flying for an airline I feel that having been with both types of flying an equal length of time I am not prejudiced

First I have made practice let downs on both ILS and GCA well below 200 ft I have seen both systems guide pilots down to and onto the runway I have performed many ILS actual instrument approaches I know that ILS is not trustworthy if another aircraft interferes with the localizer or glide path signal But when this happens I receive a warning by a quivering of the cross-pointers and a red warning flag comes up immediately warning me of a malfunction Together with this I have an audio signal and at the same time the tower is monitoring the ILS I might add, when it is working (and it has in all my experience of actual instrument let downs), it is really giving me the low down

As for the "characteristic hunting (oscillation)" this can be eliminated by skill acquired through practice This is not a fault of the ILS but of the pilot trying to fly the beam

In my GCA experiences I had one operator guide me into the Potomac River on a practice approach to National Airport, another operator guided me into a hangar in Chicago These could have been two major disasters not counting the minor mistakes of "headings" I have received You may say that these were inexperienced operators practicing Maybe so, but no one ever told me nor proved it to me I can only say that in comparison as Capt Hession points out, the human element does enter into both systems but in GCA there are two vital human elements compared to one in the ILS—and that latter is myself Since I'm getting paid for not only the skill of an airline pilot but for the responsibility as well, let's keep it in the cockpit GCA is fine for the Air Force or Navy where there are many pilots who are called upon to make a flight they aren't sufficiently experienced or trained to fly GCA can and does perform a wonderful job and it is one of the greatest aids that they have

All I ask is let the airline pilots fly ILS with GCA monitoring them for safety

C W B

Beech Output

I am sure that not only ourselves but all Wichita is very appreciative of your editorial, "Wichita—Bright Spot in Aviation" But the 127 twin-engine airplanes and the 277 Bonanzas since the war are actually the airplanes sold by our Export Sales Dept only Our total postwar Bonanza production is over 1900, and our total twin-engine production—the Model 18—has been over 475

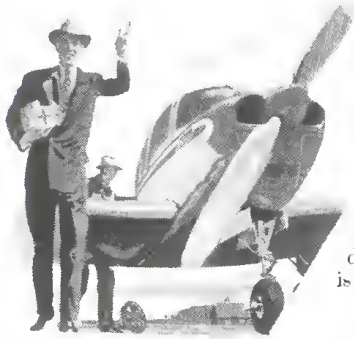
LEE H SMITH, Sales Manager
Beech Aircraft Corp
Wichita, Kans

Customer service gets a *lift!*

...with a company-owned Bonanza

Constant Hosiery Stores are scattered throughout the Middle West. President H. E. Constant stays in touch by Bonanza, makes it home to Milwaukee for dinner, too! "Our Bonanza operates 12 months a year," he states. "It's invaluable to rush promotional material and merchandise right from our mill."

"We deal in 'out-size' products, such as trailerized truck tanks," says J. K. Downer of Scientific Brake and Equipment Company, Saginaw, Mich., "and our sample case would fill freight cars. We pick up distant customers with our four-place Bonanza, bring them over for plant inspection and return them in hours. Sales are easier to make. We get to know our customers better, too." All this at the Bonanza's amazingly low operating cost—measured in pennies per mile.



"One of our agricultural machinery customers was combining wheat in Texas when he needed parts—fast," reports A. A. Dryden, president of Oberlin Motor Company, Oberlin, Kansas. "He was 520 miles away, but our four-place Bonanza got parts there three hours after his call. When we give service like this we *keep* our customers, even though other distributors are nearer. Our Bonanza is a real sales tool!"

Cut waste time out of travel time

Add up the hours you spent last month just "going somewhere" on business. Cut them by two-thirds. That's what a company-owned Bonanza can do! A note on your company letterhead will bring an informative 60-page brochure on "The Air Fleet of American Business." Write today to Beech Aircraft Corporation, Wichita, Kansas, U. S. A.

Top speed, 184 mph
Cruising speed, 170 mph
Range, 750 miles

BEECHCRAFT
BONANZA
MODEL A35

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS